SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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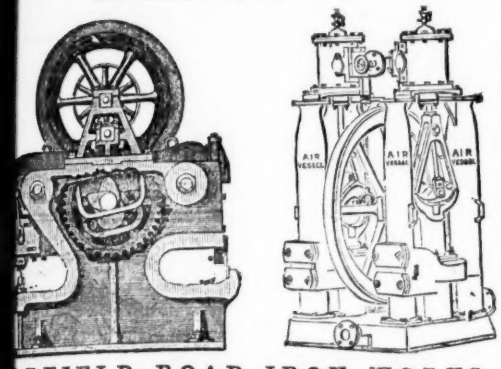

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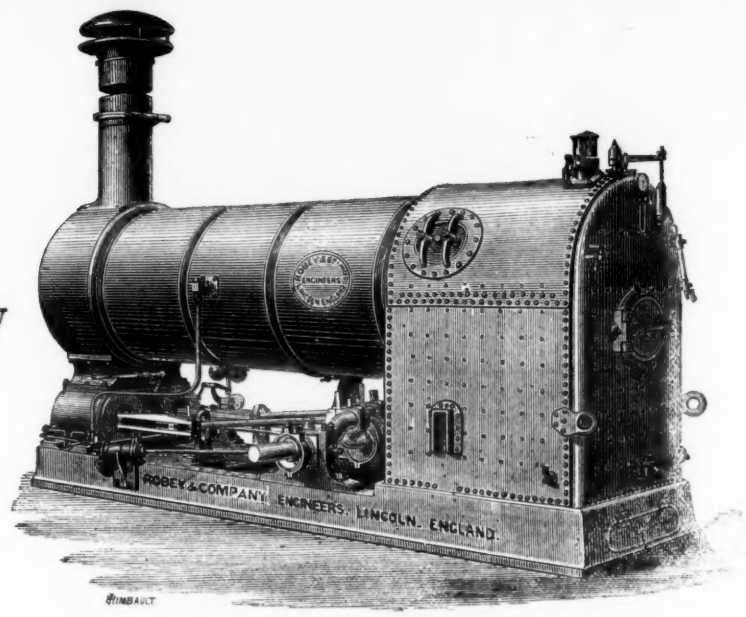

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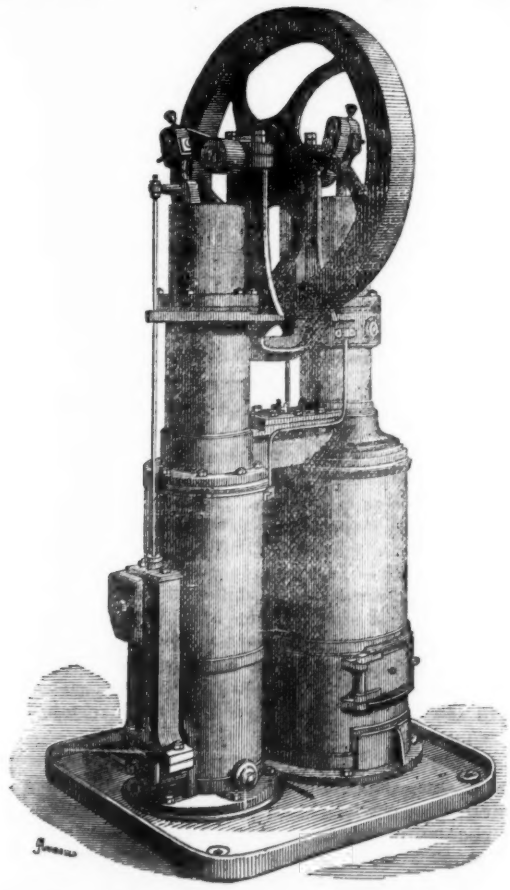

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WESTERN (AMERICAN) ENTERPRISE.

There are not wanting signs of a recovery from the severe and continuous depression which has characterised alike home and foreign investments during the past three or four years. Already there is an awakened activity and confidence displayed in certain branches of enterprise in which American not less than English interests will be beneficially affected, and probably nowhere will this relaxation of commercial stringency be witnessed with greater satisfaction than in some of the ore-producing states and territories of the Pacific Slope.

Labouring under the disadvantages of a currency depreciated in value, and restricted in its issue, it is not surprising that the large mining areas of Utah, Colorado, and Eastern Nevada should have suffered in proportion, as outside capital and enterprise have been withdrawn or suspended, the first-named district being subjected in an eminent degree to the injurious influences which, commencing with the abrupt check upon mining speculation in 1872-3, caused by the unprofitable results attending outside enterprise (due perhaps less to an injudicious outlay than to maladministration), culminated in the recent financial panic.

Utah, in common with all states and territories of the Union, having a national circulation, is liable to experience the disturbing effects of a monetary crisis occurring in the commercial capital. During the late panic, which originated in the Eastern states, and which extended across the Continent, holders of marketable commodities in the Middle and some of the Western states were unable to realise, except at a considerable sacrifice; and Utah, more than ever, presented the anomaly of possessing an abundance of silver but no greenbacks. The necessities of the situation were mitigated to a certain extent by the railroad companies, who received lead and base bullion at their exchangeable value, plus cost of conveyance in payment of freight; but the sudden contraction of the normal circulating medium, and the check thus placed upon daily business transactions, were productive of great inconvenience, and in some cases of considerable loss.

It has been suggested that the establishment of a mint at Salt Lake City would relieve the pressure on the community in the event of a similar exigency arising, but it is clear that the help provided by such an agency, which in itself would be of a tentative character, would be totally inadequate to meet the difficulty. Until the development of the great natural resources of the country opens up a legitimate field for the introduction of capital and labour, and which would tend to the removal in an important degree of the financial disabilities under which the territory suffers, Utah will probably continue to be exposed to periodical crises like the one from which she is only now experiencing a recovery.

There can be no doubt that of late mining has been unfavourably affected as much by a general deficiency of speculative enterprise as by a diversion of capital from this to other forms of investment. But while it would be unfair to infer from an inactivity of mining speculation a similar and equal stagnation in mining industry, there is an obvious connection between the two forms of enterprise, and a depressed condition of the one will be reflected by a dull state of the other.

The physical conformation of Utah presents some rather remarkable and interesting features, pregnant with instruction both to the geologist and the miner. Traversed from north to south by the Wasatch range, an important spur of the Rocky Mountains, which forms the eastern rim of the basin, and presents an immense terrace wall bracing up the broad elevated tableland which stretches out eastward of it, and of which it may be said to form the western escarpment, the broad geographical area of Utah consists of alternate mountain range and valley-plain, the latter often of great width, and enclosed by almost precipitous walls of plutonic rocks. The intermediate ranges of the basin are very similar to each other in character, and vary in altitude from 1000 to 7000 ft. above the valleys, culminating in occasional peaks. In geological structure these ranges are more or less complicated, showing rocks from the azoic to the glacier period —here metamorphic rocks, quartzites, slate, and limestone; there an outburst of syenite or granite, volcanic rocks of often the most diverse and picturesque appearance, or broad tableland of lava overflow.

In the extreme north of the territory, the surface of which consists of a moderately rich and productive soil, well watered for the greater part, and having numerous effervescent springs, are to be seen fields of waving grain or meadows of luxuriant grasses, the climate during the chief portion of the year being one of great rigour, while at its opposite pole, a distance of less than 600 miles, the vision is met by volcanic upthrusts of huge lava ridges, the mountain sides seamed by the molten stream, which in its descent has distributed itself in numerous floes and irregular quaintly-shaped masses, covering the foothills with rough scoriæ, and leaving traces of its erratic course for miles around, the liquid lava having passed to the broad valley of the Santa Clara, the whole region presenting a sombre fiery aspect, while loud reports issue at times from the depths of cavernous recesses and unexplored abysses of extinct craters, as though the tremendous agencies of the past had not yet expended their full force. Here, it is needless to say, there is almost perpetual summer, and the sub-tropical growth of Italy in all its fullness is reproduced.

The great salt lake basin, including within this description all the lesser valleys south to the rim of the basin, is supposed to have been at one period an immense inland sea of fresh water, and among the most striking of the physical features of the basin, which stand out with great distinctness, are the series of benches and terraces on the slopes of the passes or canyons and the principal valleys of the territory. On the rugged sides of the bold picturesque canyons of Weber and Echo are to be seen a number of horizontal and parallel lines more or less distinctly marked, which on a near approach show to be formed of beaches of gravel, and which having a gentle inclination plainward extend in a series of terraces from the foothills of the mountain to the bed of the canyon and margin of the lake. Through the clear air the continuation of those horizontal lines can be seen for miles girdling the mountain sides and the rocky islands of the lake. The general character and uniformity of these features seem to afford conclusive evidence that each terrace marks the position at which the land wash of a great inland sea once stood, and that the present lake, large as it is, presents but the remnant of one twenty times greater. Besides the prominent beaches so generally observable, a close inspection in certain localities reveals indications which favour the hypothesis that the ancient sea reached to even greater altitudes than where the well-marked terraces define its sometime boundary. The old overland track, after leaving the desert, and before entering the confines of Nevada, crosses the Deep Creek, which flows through a narrow elevated valley. On the sides of the valley, at an elevation of 1800 ft. above the lake, are immense beds of gravel uniformly deposited, evidently by water, which have the same parallelism that is discernable in the valleys opening into the desert and the lake. Further indications confirmatory of the supposed great altitude which the surface of the lake attained in former times are to be seen at Bingham, on the east side of the Oquirrh Mountains. There, at a height of 300 ft. above the present bed of the canyon, and 1500 ft. from the level of the valley, a portion of the old bed is preserved on the mountain side. And although the canyon has an unbroken descent towards the plain, it would appear to have become choked with great boulders of the country rock much waterworn, probably when the highest beaches along the foothills were formed, and before the general subsidence of the lake began. In the clay, and with the fragments of quartz veins which fill the interstices between the boulders, much of the gold which gives Bingham its celebrity in placer mining is found.

It needed but a limited knowledge of geology to predicate the existence of mineral deposits in the mountain ranges of Utah; and, although it was the obvious policy of the leaders of the Mormon Commonwealth during the earlier years of the settlement of the Salt Lake Valley to discourage mining and all attempts at development of the earth's mineral treasures—seeing that the withdrawal of labour from agricultural operations, at that time almost a necessity for individual existence, might be attended with the gravest results—the fact of their discovery became generally known.

The mineral-bearing rocks of Utah have been traced from north to south a distance of nearly 400 miles, and it has been proved that the territory contains not only the precious but the more useful metals, the local distribution of which is believed to be superior to that of any other single state or province. Among the deposits the following occur:—Coal (anthracite, bituminous, and lignite) in great quantity, magnetic and hematite iron ores, galena, bismuth, antimony, borax, nitrate, graphite, &c. Gold is found associated with argentiferous and cupriferous ores in several of the mountain districts, the proportion in some cases being very considerable. It is also found in combination with iodide of silver in veins of copper ore. Deposits of gold in alluvium occur in various parts of the territory, but, with the exception of the placer mines in Bingham, the precious metal has not been found in sufficient quantity to make its extraction remunerative. Gold-bearing quartz has been found in Butterfield Canyon; at the head of Carr Fork, in West Mountain district; and also at Deep Creek. The silver ores occur as pure sulphides (silver glance) and chlorides (horn silver), and in some rare cases as chloro-bromides, and differ considerably in their composition. Small samples of horn silver containing gold have been taken from one district, which have assayed as high as $20,000 and $25,000 per ton. The principal silver-bearing ores are associated with lead, copper, bismuth, and antimony, and with one or the other of these minerals are found widely distributed. Pyrargyrite has been discovered in small quantities. Galena prevails in nearly every mining district. In the Wasatch and Oquirrh range of mountains large bodies of argentiferous galena and carbonate ores have been opened, carrying in some cases as high as 75 and 80 per cent. of lead. Copper ore, which occurs in the form of blue and green carbonates and red oxide of copper, is found associated with other minerals in a greater or lessser degree throughout the territory. Good prospects of carbonate and black oxide of copper have been found in Silver Creek, an affluent of Weber canyon, and specimens of fine yellow sulphurets of copper have been discovered in Star district. Bismuth occurs in combination with other ores, but not in appreciable quantity. A mine of native bismuth has been opened in the granite range in Beaver district, which has been worked from an outcrop on the surface to a depth of 90 ft., the ore being found in a vein of silicious rock about 5 ft. wide. This ore when dressed will average about 43 per cent. bismuth. It also occurs as a sulphide. Cinnabar (sulphide of mercury) has been discovered in Camp Floyd district, and in small quantities in one or two other mining districts.

Until 1862 the greater portion of the present State of Nevada formed part and parcel of the geographical area of Utah; and, as the central or eastern, and more southern districts apparently correspond in geological formation to the western portion of the country, it is not unreasonable to suppose that the former region will be equally as productive as the latter when the same conditions, which have so signally proved the value of the severed portion, come to be applied towards its development.

Now that the chief mining divisions are being brought into easy communication with the principal towns of the territory by the construction of narrow-gauge railroads, attention is being directed to the internal resources of the country as presenting a probable field for judicious enterprise.

That Utah, possessing as she does the elements which contribute to a successful future, will become one of the principal ore producing states of the Pacific Coast will hardly be denied by anyone who has noted the great natural endowments of the territory, and watched the progress which, notwithstanding the restrictions placed upon all commercial operations by the financial disturbance to which the continent has been subjected of late, and the withdrawal of foreign capital, has been made during the past few years. The commercial values of the imports and exports of Utah for 1875 represent a gross sum of nearly $20,000,000, while the real property, agricultural produce, and manufactures (which includes the product of 10 woollen and cotton factories) for the same period has been assessed at $30,000,000, or 6,000,000*l.* The bulk of the commercial trade of Utah is necessarily confined to the Eastern and Western states, with which communication is both direct and rapid, but transactions with foreign ports already enter largely into both the receipts and shipments of the territory, and there is every indication that this connection will be extended. Enjoying easy communication with the Atlantic and Pacific seaboards, Utah can exchange products with the markets of the world.

RICHMOND MINING COMPANY.

Sir,—It appears strange that with money quite a drug the shares of the Richmond Consolidated Company should stand at such a low price considering the present prospects of the company. By the statement of accounts to end of Aug., 1875, there was a balance to the credit of the company of over 20,000*l.*, and a dividend of 7s. 6d. per share was declared, which has only now been distributed, consequently nothing has been paid out of the net revenue for the year ending on the 31st inst. Now, what will this amount to? For the six months ending Feb. 28 the gross earnings may be taken at 6000*l.* per week, making 156,000*l.* for the half-year at the same rate to the closing of the works on April 4 (say, five weeks) 30,000*l.*; by the circular of the directors till end of July 112,000*l.*, and for the month of August over 50,000*l.*, amounting to 348,000*l.* One-third of this —116,000*l*—at least will be net revenue. Out of this a dividend of 7s. 6d. will probably be declared, leaving over the very large balance of 95,000*l.* In addition the reserves of the mine are much more valuable than they have been at any former period. H. C.

Aug. 16.

AMERICAN MINES—RICHMOND CONSOLIDATED.

Sir,—It would be exceedingly difficult to find a class of investments whose results have been so unfortunate to the share or stock holders as those of American mines, be they the hydraulic or base metal mines. There is not much difference in the merits of one or the other of the large companies brought out and foisted on a credulous public at the cost of hundreds of thousands of pounds. The Emma, Flagstaff, Tecoma, Last Chance, &c., survive to show a lingering remembrance of folly.

Richmond Consolidated, constituted to purchase a mine for about 200,000*l.*, which was perhaps actually worth less, has since issued and raised 10,000 shares of 5*l.* each (50,000*l.*), and in addition they got 5000*l.* as premium on 2000 shares, which the vendor surrendered, making 15,000*l.*, or 65,000*l.* Debentures have been sought for 50,000*l.*, but 40,000*l.* issued, making 105,000*l.* of capital created since the mine was constituted. Dividends of about 140,000*l.* are said to have been paid in five years, so that taking additional money obtained from dividends paid we have 40,000*l.* for five years profits, or 8000*l.* per annum, or 3 per cent. per annum. Financing as a science is improving even while the ashes of Emma, Flagstaff, and smaller schemes smoulder.

We are informed Mr. Probert has again gone out to superintend the mine and smelting. All who know Capt. Rickard speak of him in the highest terms as a man of truth and ability. Capt. Rickard cannot prevent limestone deposits falling off and becoming poor, suddenly cutting out is their character from the time first opened to the present. Since Mr. Probert's arrival the returns have increased, until we see $67,000 as a week's value of metal smelted. Why do not the directors or secretary tell us how much of this metal is derived from Richmond Consolidated, how much, if any, bought in lead ores, and how much profit or loss is made upon such purchases? It requires no stretch of imagination to see that Emma could be resuscitated as a dividend mine, and large returns made by issuing debentures to buy ores to sell again and pay dividends, keeping up a show of a great property, when in fact there may be no property at all. It is not supposed that this is practised in Richmond, but the absence of any statement of the quantities of ores purchased as well as raised in the mine, with the like issue of debentures, making the capital of the company over 300,000*l.*, is calculated to create serious misgivings in the mind of any shareholder who knows anything of the nature of mining in this district. Debentures have hitherto been the curse of every mine with which the writer has been acquainted, and the result of this will be awaited with satisfaction if it prove an exception.—*August* 16. Investor.

P.S.—I may say I have had no interest in Richmond, or market price of shares.

PACIFIC COAST MINING NOTES—No. V.

APPRECIABLE DECLINE IN LEADING MINING SECURITIES—FALL IN PRICE OF THE BONANZA STOCKS—DEPRECIATION OF SILVER THE CAUSE.

Sir,—Whatever Trans-atlantic financiers may think of the silver question as developed in Europe, there is one thing certain—that here, where silver is produced in such abundance, it has a much greater significance than one would at first view be inclined to imagine. The history of gold and silver is intimately blended with that of the human race, by whom they were early appreciated and recognised as standards of value. Antiquarian research reveals the estimate in which they were held by the ancients, who, doubtless, suffered as much from the cydical depreciation of the latter as the moderns do at present. For more than thirty centuries these metals have been the medium by which trade and commercial intercourse among distant nations have been regulated. The mines of Egypt, Armenia, Spain, and some other countries 600 years anterior to the Christian era produced sufficient of the precious metals to cause a marked advance in the price of food and other commodities.

We are told that the mines of Carthagena alone employed no less than 40,000 men. This was rather a respectable number to be engaged daily in the arduous occupation of mining, which, after all, appears not to have proved as remunerative a venture as it does now-a-days; the quantity of gold extracted by this army of miners not equalling more than the small sum of $1000 or $5000 per day. But then there were no Comstock bonanzas in those days, and the mysteries and power of the steam-engine were thus unknown, for there flourished no Watts or Fultons to demonstrate its use and its applicability to the various wants of humanity. The mines from which the ancients are supposed to have obtained the most treasure existed in Asturia and Sardinia. Alexander, at the great battle of Arbela, fought 331 years before Christ, took about $250,000,000 in gold and silver from the Persian monarch Darius, a sum nearly equal to the amount of silver which Germany has demonatised, and which is now working such wide-spread feeling in both Europe and America. The influx of gold and silver, particularly of the latter, was so great at the death of the ruler of the Macedonian empire that the bushel of wheat, which 250 years before cost but 15 c. or 16 c. of our money, was valued at a sum approximating 300 ozs. of silver. History is now repeating itself, and, with silver quoted at 48d. per oz., it is no wonder that we are suffering from inflated prices, drooping money values, and—from what may appear paradoxical to those placed at a distance, in view of the plethora of silver extracted, hoarded, and in circulation—hard times generally. The people of Nevada and San Francisco are greatly excited on the vexatious silver puzzle. The trade dollar originally coined for the China market has been tabooed, except at a discount of 10 per cent., by the merchants and traders of this Coast.

There was a very animated meeting held recently at Virginia City, Nevada, for the purpose of considering the situation. Some strong speeches were made by the wholesale merchants present, who severely criticised the financial policy of Congress. Among the most practical speakers was a Mr. Conrad Weigund, assayer, a gentleman who has given a great deal of thought to the present financial muddle. He endeavoured to impress upon the meeting that it was better to adopt a silver standard throughout the State, do away with the discount business altogether, and, in lieu thereof, he said, advance the price of goods, and allow a premium on gold when tendered in payment of purchases. He considered it absolutely disgraceful to see the business men of one of the richest States in the Union in the precious metals giving their countenance and support to a scheme having for its object the further depreciation of silver. If, as was alleged, brokers were sending trade dollars and other subsidiary coin from San Francisco, from which they were reaping large profits, his plan, if adopted, would put a stop to the nefarious traffic as effectually as the discount plan, and would, besides, have the advantage of keeping silver in circulation. This was sound advice; but it was unheeded, for the resolution placing 10 per cent. discount on trade dollars was carried. His whole argument was found nicely condensed next morning in the Territorial Enterprise thus—"It is as easy to adjust bacon and beans to silver as it is to adjust silver to bacon and beans." The action of the Virginia merchants, who, doing business in the midst of a silver-producing region, thought fit to degrade that which is its staple product will not add to the public confidence, nor serve to allay the fears that are entertained relative to shutting down of the bonanza and other productive mines of the Comstock lead. The bonanza firm of Messrs. Flood, O'Brien, and Co., it is said, would do so until such time as silver got back to its former standard, but for the loss which it would occasion to stockholders here and at the East. It is, however, rumoured that if this is not done the majority of the thousands that are now delving away in the bowels of the great lode will be discharged, and the gold which would be extracted from the ore brought to the surface and milled would be disposed of, while the silver bricks were to be stacked away in the vaults of the Nevada Bank till the value and importance of silver were again recognised in the world. The mining men of Virginia City have had much to contend with in the past year, and they urge that the mines cannot stand everything. They suffered from the failure of the Bank of California, in August, 1875, and again from the ravages of the fire-fiend in October following, and from the fall in silver, and now they are again called upon to bear against the mistaken policy of Virginia's merchants. Verily theirs is a hard lot; but would it not be yet harder if they had neither mines nor silver to fret about? If the latter happened to have been the case many of those who now fret and fume about the loss which they daily incur from the fall in silver would find themselves in the trying situation in which Othello found himself on a memorable occasion—without a calling, without funds, without palatial residences, and, mayhap, without a name placed upon a pedestal to distinguish them from others of their species. All these they have, but the demon of discontent still possesses them. Mining securities are, they say, becoming more depressed and more difficult to handle, the increasing skrinkage deterring speculators from investing. In this they are partly correct, for stockdealers have lately shown a disposition to look on rather than buy, and to unload whenever they get the chance rather than take in even at figures which should tempt the most wary *habitue* of the Stock Exchange.

In consequence of this apathy the mining share market has within the past month lacked the animation which distinguished it during previous months. Prices are, therefore, nominal compared with past rates. The "bears" are sportive as young kittens, albeit many of them must have been pretty severely singed of late; but if they have to any great extent shared in the ruin which they themselves were instrumental in producing let them suffer. They sowed the wind, and now let them reap the whirlwind.

Writing to the Journal on May 20, I exhibited the quoted prices of the Consolidated Virginia and California Mines. Those prices were the figures of but a day; of course, fluctuations being in order. They, however, indicated the value of these two properties at that time, and a comparison of that value with the value set upon them now will prove interesting as demonstrating the tumbling process that has been going on, and to which I have heretofore adverted. The market value of the former on May 20 was, I find, $43,200,000, while the latter footed up $38,800,000. The present rates are—for the California, $29,700,000; Virginia Consolidated, $25,920,000. The first exhibits a falling off of $13,500,000, or a fraction less than 31 per cent.; and the second shows a shrinking of $12,880,000 since May 20, or a depreciation of nearly 33⅓ per cent. These figures give a loss of $26,380,000 on both properties since the aforesaid date. Who will say that this is not a tremendous loss in the short space of two months, or less by three days? No wonder that many of our leading operators are placed *hors de combat*. Whole fortunes have been dissipated, some reckoning their losses by hundreds of thousands, others by tens of thousands, and others again by thousands and hundreds. Such are some of the changes that have been wrought by the touch of the subtle wand of Mistress Fortunio within a few

weeks in the condition of those who were wont to view stock speculation as the acme of human pursuits, and themselves as the Nestors of the Exchange. Margins have been the rock upon which they floundered, for failing to make good their 40 per cent. at each successive drop in the price of their favourite stock they were ruthlessly sold out by their brokers, whose cry for more "mud" when mud was not plentiful carried with it visions of impending ruin and bankruptcy. There is, however, a better feeling manifested by buyers to-day, and prices are gradually stiffening under the influence of increased demand for leading securities. Confidence will soon again be restored, because the mines are really as valuable as they have been at any period within the past year, and as worthy the attention of speculators as ever. Money, too, is plentiful, and bankers' rates have not changed for first-class paper. It is also a noticeable fact that notwithstanding the onslaught which was made on the bonanza mines they kept on in their every-day development, and gave forth their daily metallic product, and paid to shareholders their usual monthly dividend of $2 per share, or an aggregate of $2,160,000 each month, from but two mines, the same as though nothing had taken place to tarnish their fame and depress their values. It is no easy thing, however, to write down the bonanza mines or to detract from their immense productive capacity. The Consolidated Virginia alone has since it began to pay dividends disbursed to its shareholders no less than $21,600,000, and the California dividends aggregate $4,040,000. But while we naturally enough admit the unequalled richness of these properties, we cannot avoid saying that they formerly sold at figures far above their actual value, and this fact is now becoming apparent to most everybody engaged in stock speculation. The present feeling is, therefore, a healthy one compared with the past feverish excitement; but mining securities, as a general rule, must suffer until silver recovers from its degradation. Low-grade ores cannot be profitably worked—hence it is feared that many of the poorer mines now running will have to cease active operations altogether. Either this or their active owners must resort to the alternative of reducing the pay of miners and others from $4 to $3·50 per day, or force them to receive their wages in silver or its equivalent in gold until better times dawn upon them. European economists must not, however, labour under the delusion—for delusion it is—that the product of the Comstock is exclusively silver. This would be a great mistake were they to do so, for the precious metals are about evenly balanced on that great lode, the estimated yield of each being 46 per cent. gold to 54 per cent. silver. The stockholders receive the former in dividends, and the miner the latter in the shape of trade dollars, which as I write are again being received at par by the merchants of Virginia and other parts of Nevada—so say the wires. There is still hope ahead, and this action of the people of the Sister State is entitled to a great deal of respect.—*San Francisco, July* 20. J. D. POWER.

MINING IN SOUTH AUSTRALIA.

SIR,—Mining here is not very lively at present. True, the old-established mines on Yorke's Peninsula—the Wallaroo, Moonta, Hamley, Doora, &c.—continue to yield their wealth of ore to the fortunate proprietors, but the price of copper is low, and the share market is overdone, and a feeling of general depression prevails. It is most difficult to get anyone to embark in any new venture, however genuine or promising. As I remarked in my last letter, it is hardly to be expected that in a population of only 210,000 we should be able to find sufficient capital to develope a very large portion of our mineral wealth. But apart from this lack of capital for mining purposes, we are unquestionably suffering from a periodical depression, probably a reaction from the mining mania which seized the community three or four years ago.

Even the new discovery in the North, which I mentioned as being so rich and promising an affair, has not been taken up with any spirit. A number of shares have been taken, but not enough to warrant the active working of the mine. I have heard it suggested that the proprietors should send home 50 or 100 tons of ore as a sample, and offer a certain number of shares in the English market. I hope it will not be long before many of our northern mines are again got to work; English capitalists will have a large interest in them, as many claims have been taken out in which they have a considerable share, and there are several valuable mines amongst them. But a grand trunk line of railway must be laid 200 miles north from Port Augusta, with branch lines, or wire-tramways, as feeders from the mines. Without some such means of communication these mines cannot be made to pay. There is the Sliding Rock Mine, 30 miles beyond Blinman, and producing the richest ore when dressed of any mine in the colony; yet this mine is in difficulties, in consequence of the heavy cost of cartage, and the uncertainty attending the carriage by horse teams. The directors are now endeavouring to raise a loan of 3000*l.* to help them to carry on their operations. A mine like that would turn out well if a railway were running near enough to carry the ore to Port Augusta.

It is greatly to be regretted that political squabbles so often interfere with the material progress of the colony. In my last I alluded to the delay in the commencement of the new railways, owing to the rejection of the Stamps Bill by the Legislative Council. Now, within the last fortnight, another turn in the wheel of politics has thrown out the Boucant Ministry altogether, and our hopes of progress have once more received a check. It would I think be well for our Government to endeavour to make terms with English capitalists to construct the Northern Railway, either on a guarantee or for alternate blocks of land. A railway through the country north of Port Augusta sufficient for all requirements for the next ten years ought not to cost more than 3000*l.* per mile. The traffic would soon be found to more than cover the working expenses of the line. The Government surveys have been made, but we must wait the settlement of political parties before any arrangements can be made towards the construction of the railways. Yet everyone admits the vast importance to the colony of the Port Augusta Railway, and notwithstanding this it has been delayed from time to time for the past 16 years. The value of our mineral exports has never exceeded 824,500*l.* in one year, and although that is a respectable amount out of a total of 4,500,000*l.* sterling of produce, exported by a small population like ours, it might have been more than double if our north country had been opened up by means of a railway.

I will post you an Advertiser of this date, from which you will see that the old Burra and Kapunda Mines seem likely soon to enter on a new era of productiveness. Such substantial improvement has already taken place as to warrant hopes of returning prosperity in those mines. Capt. Sanders, at the Burra, and Capt. Osborne, at the Kapunda, deserve great praise for their patient perseverance and skilful management of the properties entrusted to their care.

In my last letter I spoke of the Lady Alice Gold Mine, near Gawler, as not being very prosperous, and of the Waukaringa Reef, north of the Burra, as having greatly improved; the case of these two mines is now reversed—such are the fluctuations of mining. The Lady Alice has during the past month turned out 401 ozs. of gold and 11 tons of rich copper ore, together worth about 1900*l.*, the working expenses for the time not much, if at all, exceeding 500*l.* The Waukaringa Reef is scarcely yet in thoroughly settled country—the greatest depth is only 130 ft. perpendicular—and lately the ground has been rather poor, and a good deal of dead work has had to be done. There can be no reasonable doubt, however, that eventually it will prove a very valuable property. Recent discoveries in California and Victoria show that the richest gold reefs are being found at depths which miners ten years ago did not dream of reaching. In California at 1900 feet and in Victoria from 900 to 1400 feet in depth splendid results have been obtained.

Not having much time for a long letter by this mail, I must refer you to the Advertiser, the Wallaroo Times, and the Yorke's Peninsula Advertiser for details on mining affairs. I may, however, mention that the Wallaroo Mines are more productive than ever as a greater depth is reached; a new pumping-engine (60-inch cylinder) was started a few days ago. At the Moonta Mine the Prince Alfred lode especially is turning out splendidly; huge bunches of rich yellow ore are met with here and there on the course of the lode. The Kurilla Mine is steadily improving; the lode is 5 to 6 feet wide at the 25, and worth 40*l.* to 50*l.* per fathom for ore. The Hamley and Paramatta Mines are both looking well, and giving hopes of a good future. The Mid-Moonta is now paying rather more than working expenses. Altogether there are more than a dozen mines at work near Wallaroo and Moonta, and either turning out profitably or giving good hopes of success. J. B. AUSTIN.

Adelaide, June 15.

MINING SUMMARY.—Operations are progressing rapidly at the Burra, and it is hoped that before long large quantities of ore will be turned out from this famous old mine. The Moonta continues to yield large quantities of valuable ore. The Prince Alfred lode is yielding splendid ore, and large chambers are being opened in the lode, showing solid yellow ore.—*Advertiser*, June 15.

The Yorke's Peninsula Advertiser says—In the several mines in this district, the Moonta, Hamley, Yelta, Paramatta, North Yelta, Wallaroo, Kurilla, Devon Consols, Wheal James, New Mid-Moonta, and Nalyappa, fairly satisfactory progress is making, and of some of them we might earnestly write very glowing accounts. We could challenge the world to produce another Moonta, with its immense lodes and its large permanent employment of labour; or a mine like its sister enterprise at Wallaroo, with its heavy expenditure upon permanent mining plant, and its enterprise as relates to further development at great depths. We can speak with the utmost confidence of the Hamley as a mine that will possibly soon stand second to none of proportionate extent in the value of its product; and nothing could be more encouraging than the history of the Kurilla under the present management. The Yelta would prove a splendid property if the one difficulty—the presence of iron in close association with the copper ore—were overcome by some cheap method of separation. The North Yelta has a hopeful future before it; the New Mid-Moonta has already begun to pay its monthly cost sheet; and the East Moonta Mine is on the point of being re-worked under an energetic local proprietary. The Wallaroo Mine is said to be yielding larger quantities of ore than ever. A large new pumping engine, of 60 in. cylinder, was started on Saturday last, making the third of the same power on this mine. At the Doora Mine a considerable improvement is reported. The 72 is yielding a quantity of fine solid ore. The Devon Consols is also looking well. There is a great improvement at the 35, where the lode is 3 ft. wide of 18 per cent. ore, worth from 8 to 10 tons per fathom. The 45 is also looking better. The Wheal James is said to be very promising, and the spirited proprietors feel encouraged to hope that they will ere long be rewarded for their patient perseverance. The Kurilla is steadily improving. The lode of ore is 5 to 6 ft. wide at the 25, and worth 40*l.* to 50*l.* per fathom. At the old Kapunda Mine sinking is being carried on with very satisfactory results, the lodes improving as greater depths are reached. The Wheal Burrawing looks well, a fine lode of black ore nearly 6 ft. wide having been laid bare at the bottom of the shaft. The Sliding Rock Mine, in the far north, has had great difficulties to contend with in the way of cartage, though the mine itself would be a highly paying property if the ore could be transported at anything like a moderate rate, say 3*l.* or 4*l.* per ton. The company are endeavoring to raise 3000*l.* to enable them to carry on. In gold mining a vast improvement has taken place in the Lady Alice Mine, at Barossa. The last month's crushings have yielded 401 ozs. of gold, and about 11 tons of copper ore, representing a total value of about 1900*l.* At Waukaringa things are not looking quite so bright as they were, but at the Alma a good deal of dead work has been done lately; and at the Balaclava good gold-bearing stone is still being raised from a reef 2 ft. wide on Specimen Hill. From the Northern Territory we have not had much mining news during the month, beyond the fact that crushing was proceeding at the Bismarck Extended claim, and a yield of 1000 ozs. of gold was expected.

THE ABERCARN AND NEWPORT COLLIERY.

SIR,—The resumption of confidence in this colliery, occasioned by the recent flattering reports, induced a shareholder to visit Abercarne, there to see and judge for himself; and, being a Welshman, speaking the language, and possessing some knowledge of mining matters, I, at his earnest request, accompanied him.

We arrived at the colliery shortly after midday, and fortunately met on the platform two men employed at the older colliery. They most readily answered our enquiries, and as the old and new collieries are about 600 yards apart we were anxious to learn their opinion of the seam last struck. The seam is not recognisable in the old colliery, and one of our informants said "The vein now struck, I believe, will never prove a workable and paying one." Under pressure they gave by way of explanation that the roof over the coals was 22 in. of a cloddy coarse fire-clay that would require a great deal of what they called timbering, by the use of pit wood, a most expensive article. The top coal was 12 in. thick, then a soft and thin parting from the second seam of barely 2 ft., with a fire-clay bottom of 2 ft. in thickness.

We proceeded to the shaft itself, and with our store of information so easily acquired and put forward by us to the men there employed we found it to be very fairly authenticated. There appears no intention on the part of the executive to open out this; and another seam called the charcoal or lignite seams, which had been extensively worked years ago by local bankers at Newport, had not proved at all in the new colliery. I trouble you thus far, Mr. Editor, by way of caution to some of the proprietary, who seem to be precipitately rushing forward when great caution and discretion are required. The colliery may yet turn out a fair one, but for the present well-informed men in this district shake their heads with considerable forebodings, occasioned by the well-ascertained fact that the amount of water in the old colliery has been reduced one-half by reason of its draining off to the new colliery.

A SOUTH WALIAN.

JOINT-STOCK COMPANIES LAW.

PROTECTION FOR CAPITALISTS.

SIR,—There can be little doubt as to the correctness of the view that Mr. Chadwick's Bill will do much to restore the confidence of capitalists in joint-stock undertakings, and there will probably not be much to fear from the appointment of dummy directors, as subclause *b* of section 5 especially meets their case. The amount to be paid as directors' fees when determined by the Articles of Association is obviously a contract made on behalf of the company, and which "is to be carried into effect out of the funds or capital of the company to be subscribed under such prospectus or notice, or is for the benefit of such promoter, director, or trustee." As such it must be mentioned in the prospectus, and the public will thus be permitted to know what amount is to be paid for the management of the concern. But there is one thing which capitalists have themselves to learn—not to be too easily led away by high-sounding names. A board of seven directors acquainted with the business to be carried on, although these may not possess 100*l.* a-piece, would be worth more to the shareholders than seven of the most non-business men in the country. In the new Bill bring in this new class of competent directors instead of the class having little but their dress and address to recommend them, with which capitalists have hitherto been contented, much will have been done towards the more profitable development of the national industry.

When a large colliery proprietor is employing a manager he does not enquire whether such manager is a landed proprietor himself, or the son of a landed proprietor, but whether he possesses such knowledge and experience as will enable him to open the colliery safely, economically, and profitably, and such a man as Earl Granville, for example, would with less hesitation give 1000*l.* a-year to such a man than to even Lord Hartington and Mr. Lowe, provided either of those gentlemen offered themselves as candidates for the office. But capitalists who subscribe to joint-stock companies take precisely the opposite view, so that the capital asked for in the prospectus of a colliery company mentioning as directors Prince Bismark, Prince Napoleon, Sir Charles Dilke, and half-a-dozen others of the same class, and equally unlikely to entertain similar views or understand the business to be carried on, would be more readily subscribed than if the same prospectus were issued with the board of direction composed of seven men who had devoted their lives to managing and viewing collieries, provided their names had not been prominently before the public. I have seen an entire board entrusted with the management of a manufacturing concern who were utterly ignorant of the cost of an engine, of the method of judging of value, or of the kind of engine required, yet who purchased and shipped a machine on the recommendation of a patentee, and without consulting either the company's or an independent engineer, and at the present time the engine lies at the South American port at which it was unshipped, it being absolutely impossible to get it to the mines without constructing many miles of railroad, impossible to sell it at the port because it is too large for the requirements of anyone who might otherwise purchase it, and impracticable to re-ship it to England, where it would not sell for the cost of the freight. It is, therefore, rusting to destruction, and will ere long be altogether worthless.

What is really required is that capitalists should place confidence in boards of direction formed of men daily engaged in the works to be carried on, and should regard directors more in the light of servants of the company. Professional directors—the guinea pigs of the City—should be avoided, and less importance should be attached to a director holding a large qualification than to his being such a man as an individual capitalist would entrust with the management of a similar affair. The presence of parsons, doctors, or lawyers on a board of direction should be accepted as conclusive evidence that the concern should be avoided by the capitalist who is unwilling to lose his money, and the same may be said of titled directors, who are generally such as merely use the title to earn a living, because they have neither intelligence nor energy to earn it otherwise, and have, moreover, the misfortune of being poor. The result of Mr. Chadwick's Bill should be to give capitalists a more competent and more honest class of directors, and to ensure the least circumspect capitalist against unreasonable loss. The prospectus ought henceforth to contain ample particulars to enable capitalists to protect themselves, and if they do not avail themselves of the protection offered they will only have themselves to blame. PROMOTER.

Austinfriars, Aug. 15.

COMMERCE, FINANCE, AND MINING.

SIR,—The time when the "Cid" borrowed money on his sword is passed, the proud Castillian can no longer raise money on his word or his signature—*i.e.*, Spain is a defaulter, and her prestige for honour and integrity is on a par with Mexico, Venezuela, Turkey, Honduras, and other defaulting countries and states. In the face of these and other public expositions and scandals pray allow us to enquire what is the criterion or standard which capitalists now adopt in estimating their varied and ramified securities and investments? Shall we answer, that which the "Cid" formerly paid on pledging his sword—interest for the money embarked, and the premiums acquired through hypothecation or realisation in case of default. These are now unhappily the elements of the chief monetary transactions of the day—immediate gains, irrespective of inherent worth and prospective advantages, are simply regarded by merchants and traders. Speculators desire to recognise alone the "rosy tints" which fascinate only too frequently to deceive; they covet wealth, and care but little how they acquire it so long as the money be obtained, honestly, if possible, but under all circumstances let thy fingers touch, grasp, and retain the gold. This is the motto of modern finance, and sad are the details that the year 1876 unveils of the fallacies and defects which have supplanted honesty and integrity in our trading and commercial dealings, and likewise the banking institutions and other gigantic undertakings which foster competition, and aid the reckless in fierce speculation and over trading ever ending in default and disaster. Fortune is at the best "fickle and capricious," and the bold are often deserted, and, like Ithaca before Ulysses, unhealthy hopes become demolished, and the prospects of resuscitation prove as groundless and unsubstantial as the vagaries and visionary hallucinations of a spendthrift or gambler.

What good can possibly arise from protests if such disasters, wrecks, and falls as Overend Gurney, Barnard, Royal Bank of Liverpool, Gledstanes, Collies, Turkey, Spain, Egypt, Peru, Costa Rica, and other defaulting firms, and states do not teach the public wisdom, nor cause them to pause in their wild career to destruction. Again, is it not enough to foster "thought and reflection" to know that the conflicts between capital and labour have ruined one-half of the proprietors of coal and iron mines, the manufacturers of iron, and those engaged in mechanical and constructive enterprises, the maintenance of which are indubitably allied with the commercial, social, and political position and prosperity of the country. Healthy speculation is good both for the capitalist and labourer, and if the disposition of Englishmen requires some degree of excitement to stimulate action, surely mining enterprises possess just those risks and hazards that should draw capital into its ranks, while the number and variety of mines, coal, copper, iron, lead, and tin, all differing in merits and character, are, of all other industries, most calculated to call into existence the latent qualities of mind and body, giving employment to the working classes, enlarging the volume of trade, manufacture, and commerce, enriching the nation, and, judging from the number and character of past prizes and successes, calculated above all other mediums open to public selection to yield substantial gains to those who devote attention and embark capital therein. As examples:—

		Capital.
Devon Great Consols gave ..... Profits	£1,192,960	£ 1,024
Botallack	124,000	23,250
Dolcoath	500,000	Nominal
Carn Brea	308,000	35,000
Cook's Kitchen	80 ,000	Nominal
East Pool	100,000	3,100
Foxdale	206,200	70,000
Lisburne	229,900	7,500
Minera	590,000	45,000
Great Caradon	373,248	600
Tincroft	300,000	54,000
West Chiverton	150,000	30,000
Wheal Basset	326,656	2,624
Wicklow	1,312,500	62,500
Wheal Buller	309,000	1,024
Total	£6,313,464	£331,522

Again, amongst progressive mines, what can hold out within the scope of speculative enterprises fairer promise than Grogwinion, Penstruthal, South Condurrow, New Consols, New St. Agnes (with ample capital subscribed, and the prolific yield of the veins already proved and recognised), Glyn, New North Pool, Pateley Bridge, West Basset, Agar, Dryburnside, and West Pateley Bridge.

Such prizes as the Van are of rare occurrence, and though the present company only date back a few years, still it must be remembered that fully 20 years were expended in the development of the property prior to its changing hands. The present market value is 600,000*l.*, and the annual dividends (four) 48,000*l.* Large as these sums are, they sink into insignificance when compared with Tresavean, United, Consols, Buller, East Rose, and many others that fascinated, while they stimulated the greed, of capitalists in working the mines of Cornwall and Devon. R. TREDINNICK,

79, *Cornhill, London, Aug.* 15. Consulting Mining Engineer.

MINING IN IRELAND.

SIR,—Some time since I saw in the columns of the *Mining Journal* a notice of registration of a company to work the Oola Mines, in the county of Limerick, Ireland. As I have been long acquainted not only with the mines of the neigbourhood, but of the Oola in particular, a few observations on the peculiarities of the strata, as well as the antecedents of the property, may not be unwelcome to those who are, or intend to become, interested. The Oola Mines, then, are situated in mica clay-slate, at its immediate junction with the mountain limestone rocks, in fact, are in a ridge, forming the apex of the argillaceous formation, running nearly east and west. The lodes are strong, and continue in depth as well as through the superincumbent lime rock. The main lodes are four in number, the strike of which are within a general line of north-east and south-west; these are crossed by two nearly parallel cross-veins running more to the north, forming acute angles with the former, these again are intersected by north and south lodes, forming nearly right angles. The importance of such characteristics is well known to practical miners, and need only be dwelt upon as being facts. The lodes are composed of capels, vein-stone gangues, carbonate of lime, quartz, iron pyrites, carbonate of iron, a little copper, and rich quality silver-lead ore. Shafts have been sunk to 38 fms. for proof of continuity in depth of the bunches of lead taken away by the old men in the adit and shallow levels, the deeper proof has been made the more satisfactory have been the results.

Some years since an engine was erected, when much valuable ore was returned from the western part of the mine, but in my opinion the eastern part of the mine will be found the site of a great deposit of lead ore; the ground gently slopes with the strata into a beautiful "pan of ground," the beau ideal of a Cornish lead miner. The lodes in this direction bear rich gossans containing lead ore to the very surface, the explorations beneath which do not betray these almost universal significations. When I first visited the property, about 17 years since, I gave very decided opinions as to the productiveness of the mine in the eastern portion, then very partially developed; the western works were in full operation, and sufficiently explained themselves; at that time the mine was the sole property of parties who had overweening confidence in their own abilities as to management, as well as to the capabilities of the resources at their command—fatal errors, as all concerned in mining know. The underground affairs were trusted to Capt. Champion, of the old East Wheal Rose Mine—an excellent school, by-the-by—whose enthusiasm in the affair exceeded his discretion, and led the directory

into expenses and outlay not at all suitable to a young and as yet struggling mine. The death of the principal led at once to the consequences every reasonable miner would suggest; confidence in the management had been destroyed, and no effort on its part could restore it. Though every exertion was made, the one obstacle—that the management should be as heretofore—became insuperable; constant vain endeavours only accumulated difficulties, under which the late manager (worthy and confident as he was) also died; the property was then purchased out and out by a spirited capitalist, who at once placed the mine in the hands of another practical East Wheal Rose tributer, with orders to really ascertain whether the property was worthy extensive operations. With a caution which might be expected from such parties, the works were resumed, the success I have alluded to resulted, and from an examination made in November, 1875, I have no hesitation in saying Capt. Phillips and his employers have proved the Oola Mines not only to be worthy a further trial but that such effort will undoubtedly be attended with success.

It would be idle folly to expect, as before was the case, that the mine can be worked vigorously without capital, this, to a limited degree, is now only necessary to the property eventuating in a great prize. I may say I saw in the 35 fm. level a splendid lode 12 feet wide, with a leader of fine lead ore 12 to 18 in. wide, the whole of the lode carrying small lead throughout. In the western part of the sett a lode worth 25*l.* per fathom has recently been cut, so that returns to a considerable amount may be forthwith made.

That Mining in Ireland has been for some time in decadence need not be wondered at when we witness the general depreciation of mining properties of every description, no matter in what country or clime situate. I know the capabilities of Ireland well, and also that the Oola Mines are in a central group, of which it will form the capital, as the Van does in Wales, and as hundreds of similar cases might be quoted. GEORGE HENWOOD.

PROSPECTIVE AND PROGRESSIVE LEAD MINES.

SIR,—In a former letter I called your attention to the advantage of investment in lead mines as compared with any other, whether staniferous, cuperferous, or for iron or for mineral products such as coal, &c. I ventured to predict that the price of lead would at least remain steady, but in all probability would advance, and I was right in these vaticinations, for lead now shows a rising market. It will be, Sir, in your recollection that I called attention through your columns to the remarkable fact that our metal merchants never export any of the lead they import, the demand for home consumption absorbing absorbing all we import and most of what we produce. Considering the large values of our lead imports, I urged upon capitalists the application of enterprise and investment in British lead mines, so that our produce should not only equal our own consumption, but also meet the requirements of many other nations, and become an export business to a far greater extent than it now is. I urged through your columns somewhat in detail the important consideration that the British Isles are replete with lead. The working of lead mines in South Wales boasts an antiquity only second to the search for tin in Cornwall, and that as a British industry was only in the rank behind the cultivation of the soil.

There will be an enormous demand for lead in China, Cochin China, Siam, the Great Eastern Archipelago, the Indo-Chinese Peninsula, and British India. In other directions Russia and the great American Unions are becoming great consumers of lead. I will not in this letter tarry to say why so, suffice it for my present purpose to observe that such is well known to be the case by all conversant in that department of the metal trade.

Whence is all the lead that will be certainly wanting to be obtained? Why not. British capitalists and miners supply all? The lead is in the womb of the British Islands, bring it to the birth. Lead in all its forms of production is obtainable in the United Kingdom. In one quality or another, united with silver, or with other metals, or in its virgin state, the ore is ready for the miner in Cornwall, Devon, Shropshire, Yorkshire, Cumberland, Westmoreland, in at least half the counties of Wales, and the Isle of Man. Ireland has vast stores of unmined lead, from the shores of the Bristol Channel and the Irish Sea on the east side of the island to the rugged coasts of the Atlantic on the west. The Isle of Man might be called the isle of lead, so rich is it in this valuable and necessary metal. The attention of the public is beginning to awaken to a conviction that all this valuable property should not be permitted to lie unused beneath our feet, and it is my object to assist in directing the energies of mining men, capitalists, and lords of the soil to the great work which lies before them, and to which they have been comparatively indifferent hitherto.

Wales is the lead region *par excellence*, and South Wales more particularly Cardigan, Denbigh, Monmouth, and Merioneth, are full of lead and silver-lead deposits. Permit me to direct your attention to one particular case. A company has been formed to work a very rich deposit in the county of Denbigh, in the parish of Llanarmon-in-Yale. The company is designated the Bodidris Mining Company (Limited). The directors are men of resource, intellectual and financial, and the operations of the association, both here and at the mine, are guided by consummate experience and intelligence. My acquaintance with mines and mining—which I may say commenced with my childhood, for my father for many years of his life was connected with mines—enables me to affirm with confidence that the Bodidris Mining Company rests on a solid basis, and offers an exceedingly beneficial investment to the capitalist, great or small. Many of the readers of your paper know Denbighshire, for wherever these miners, merchants in metals, or investors in mining undertakings, there are readers of the *Mining Journal*. I may, therefore, appeal to the judgment of many, founded on their personal knowledge as to the prolific metalliferous character of the district of Denbigh, where the property of this company is situated. The estate extends about 1½ mile in length on the course of very rich lodes, and comprises the old Craigiog Mine, as well as the newly opened one.

The old Craigiog was worked to a depth of 300 ft., and 36,000*l.* was realised, when the company abandoned operations, not because there was not ore to be brought up, but the price of lead was never so unremunerate in this market as just at that time. It was as low as 7*l.* per ton, an extraordinary circumstance, as this metal carries a steadier market than any other, and mining for this metal is more remunerative than any other. There are far fewer instances of loss by lead mining than of any other mines, either metalliferous or mineral. Had the proprietors of Craigiog been more hopeful, more spirited, more enterprising, more liberal, and possessed a better knowledge of lead mining and the lead market, they would have gone on with the work, and reaped the rich harvest left for the sickle of others. "He that regardeth the wind and sows not shall not reap." "He that goeth to war and counts not the cost it is folly to him."

About two years ago the mine was re-opened by private hands, and the work prosecuted industriously, with the result of very valuable discoveries. To develope these and thoroughly open up the mine, as well as operate upon the rich lodes lying along the property, the present company is formed. Your readers will comprehend that there are three lodes, at the junction of which the greatest wealth of the mines will be found, and to this present operations are directed, so as to draw forth as soon as possible the pregnant wealth that is there.

At present the workings are profitable in a great degree. The lodes are parallel to those of the Minera Mines well known to the readers of the *Mining Journal*. For seventeen years they have yielded an average of 400 tons of lead per month, and paid in dividends much more than half a million. It is not too sanguine to hope for equal results in this instance; "the country," as miners call it, is the same; like geological phenomena are indicated, and all persons conversant with mining know what that means; there will be like effects from like causes, or, in fact, like effects from identically the same causes—it only requires skilful working with adequate capital. It is most necessary to ask who can wing the arrow from the bow of Ulysses; as competent men as ever turned the lead ore of the Minera into nearly 600,000*l.* in gold, will direct and carry out the operations of "the Bodidris Company." One gentleman of skill and experience writes of the locality thus—"The geological position I take to be the most important consideration in dealing with prospects and probable results. The stratification is the carboniferous limestone, extending from the well-known Talargoch Mines at the extreme north to the great Minera Mines near Wrexham on the south, embracing a sectional area of country in which all the renowned mines of Flintshire have been developed, and in which, within the prescribed limits of such sectional area, every main lode hitherto worked has been most productive, so that I can say with the greatest confidence the geological character of this property is all that can be desired; having found main lodes here I have no doubt of their proving rich when fairly laid open." To this admirably expressed description I can subscribe *ex animo*.

Let it be added that the company can command cheap fuel and cheap carriage; the mine is on the borders of a coal field, and road and rail offer their facilities for conveying the ore to the destination designed for it. The price of lead is now exceedingly favourable, very much more than twice its market value when the old Craigiog stopped. Surely, Mr. Editor, at a time when the value of money is not quite 1 per cent., and opportunities of investment are so few, this excellent one will be made available. As I am thoroughly acquainted with the property, and highly value its prospects, I shall have pleasure in affording more precise information at my offices, 26, Finsbury-place, City. JOSEPH J. REYNOLDS.

THE DISCOVERY OF DEVON GREAT CONSOLS.

SIR,—My attention has been drawn to a letter in the Journal of the 12th inst., headed "Mining in Cornwall," and signed A. Bennett, which relates to matters in connection with the discovery of Devon Great Consols. Although Mr. Bennett's statements are made in a somewhat affidavit-like form, they are so surprisingly erroneous—indeed, so groundless—that I am at a loss—in fact, completely puzzled—to understand what circumstances can have given rise to them. Notwithstanding their fabulous character, I do not allow myself to believe for a moment that they will be found to justify any impeachment of the veracity of Mr. Bennett. He has, no doubt, simply told the story of some one or other, fully relying on the truthfulness of his informant, whoever he or she may be, and not thinking of the responsibility attaching to him as deponent in the case, which, by the personal pronoun style of his letter, he has rendered himself liable to be thought, having unfortunately allowed his statements to be assumed to be true of his own knowledge, whereas they rest on no better ground than hearsay, which is, and ever will be, a prolific source of misrepresentation, in some cases proving so mischievous as to result in unfriendly feeling between people. In the way indicated Mr. Bennett is at fault, but he has done nothing intentionally wrong, only having been indiscreetly credulous. I am very certain of this being so, presuming that he is my "old and trusty friend"—Mr. Absalom Bennett, of Marazion. In correcting his unwittingly erroneous statements touching the initiative circumstances of the Devon Great Consols, I will take them in the order in which they appear in his letter, and for the attainment of the end in view there will only be required of me a few brief contradictory particulars. In the first place, Mr. Bennett says—"The Devon Great Consols was discovered by half-a-dozen young men from London, most of them natives of Exeter." I emphatically assert this to be no better than fiction, the discovery and commencement of Devon Great Consols being due to me, and the case will admit of being submitted in a few words in a forcibly concise and convincing form.

The highly promising character of the mineral stuff altogether, more particularly the pre-eminently grand gossan (the produce of the back of the lode) found lying about here and there at the surface near some old workings, and a half-and-half sort of shode pit and trial shaft about 20 ft. deep, fixed my determination the moment I caught sight thereof. I at once set about securing the ground by lease in the usual way to authoritatively allow of the lode being opened out, which, as is well known to the mining interest, soon proved to be one of very great productive power, being found of the value of 300*l.* per fathom and more, at a less depth than 20 fms. The lease was obtained for the Messrs. Thomas, Morris, and Gard, gentlemen of high standing in London as stock-brokers, bill discounters, and wine and coal merchants, two of whom are yet living, W. A. Thomas, Esq., being the Chairman of the board of directors, and Thomas Morris, Esq., the local managing director of the Devon Great Consols, who also are amongst the largest shareholders. I know nothing whatever of the half-dozen reputed discoverers of Devon Great Consols—"young men from London, most of them natives of Exeter." What a preposterously improbable story! Very like a whale in a butter-boat.

Have they ever had any other than ideal existence? If so, who are they, and what about their names?

The next statements of our too-readily believing friend are the following:—"An interview with Capt. Josiah Hitchins took place, who recommended Wheal Maria—a sett commenced by Col. Drake, who called the mine after one of his daughters. Had Col. Drake sunk the shaft 5 fathoms deeper he would have cut the ore. Shares rose in 12 months to 850*l.* per share. The dividends paid amount to nearly 1,500,000*l.*" This deposition, so to speak, is erroneous throughout. The interview spoken of never did take place, but, allowing that it did for argument sake, how is my having recommended Devon Great Consols (then Wheal Maria) to my interviewers to be reconciled with the claim set up for them as the discoverers of the mine? Moreover, Col. Drake never had anything to do with Devon Great Consols or Wheal Maria, which name was given to this mine by way of compliment to my wife; the shares did not rise to 850*l.*, nor have Devon Great Consols paid dividends amounting to "nearly 1,500,000*l.*," but 1,187,440*l.*

It is right, for more reasons than one, that such statements should be corrected; the broad principles of impartial truth and justice on which the *Mining Journal* is conducted not allowing you, as its Editor, knowingly to disseminate information unsanctioned by a strict adherence to truth. JOSIAH H. HITCHINS.

NEW CONSOLS.

SIR,—In last week's Journal appeared a brief notice of the important works at this mine, which is worthy of the subject to which it relates. In the present state of mining industry it is clear, with very rare exceptions, no single mineral is capable of being extracted at a profit in competition with the rich deposits of similar metals which exist in foreign countries. The peculiarity of this mine is that the lode contains four metals, each of which by itself is incapable of producing profitable results. In the return recently made to the Government, the products of the different mines in Devon and Cornwall are specified, and I find that only one mine is therein stated to produce four metals. Some produce one, some two, and some three, but only one four. Hence I presumed that the one alluded to in the above report is the New Consols Mine, in Cornwall, which produces arsenic, copper, silver, and tin.

This mine was formerly worked for copper, and afterwards for tin. Whilst worked for copper it had to depend upon discoveries of rich courses of ore of that metal, and, subsequently, when tin was discovered its returns were made from that metal and the arsenic which was obtained in burning prior to dressing the tin. Whilst tin remained at a high price good returns were made from both these metals, but on the serious decline in the tin staple the attention of the management was directed to the ordinary wet process for extracting the copper and silver existing in great abundance in the masterly lodes. To attain this result a large outlay has been made, and the most improved machinery erected, capable of treating about 40 tons per day, from which nearly the whole of the metals—copper, silver, arsenic, and tin—are now extracted from the ore with a regularity and system which augur well for the future prosperity of the mine.

From personal observation, I am not of opinion that the results obtained can be successfully applied at mines producing only one or two metals, as the operations of treating the ore are somewhat costly, and are only capable of being entered into where all the above metals exist, and where large quantities of ore can be cheaply raised, as at this mine. A great deal of nonsense has been written from time to time about marvellous new processes, but, so far as I have seen, the operations at this mine consist of a simple mode of treatment, on principles perfectly well known, of chemically extracting the various metals from the ore, leaving the tin to be extracted in the ordinary method by gravitation, and I heartily wish its enterprising proprietors every success. OBSERVER.

Tavistock, Aug. 14.

A LIBERAL SUCCESSFUL ADVENTURER.

SIR,—Many gentlemen in Cornwall and elsewhere have become rich by mining—many of them raised from poverty to great affluence—but it is remarkable how very rarely any of them show liberality to the labouring miners by whose sinews the result is achieved. Mine agents and pursers are sometimes testimonialised, and that with little reason, but the poor miner is regarded as *nil*. But if there is no modern consideration for the poor man, who is regarded too much as a machine, I can give you an instance which occurred 70 years ago. I read the following in the "Cornwall Gazette" of Dec. 29, 1804:—"Ralph Allen Daniell, of Truro, esquire, presented the miners of Wheal Towan, and the poor of the parish of St. Agnes, a remarkably fine fat ox, several hundred loaves of bread, and a proportionate quantity of porter."—*Aug.* 16. R. SYMONS.

NEW ST. AGNES.

SIR,—I see that the new company being formed by Mr. J. B. Reynolds for working this mine have applied the word "new" as a prefix to the old or late name, and omitting the final word "Consols." There is nothing novel or objectionable in their doing so. Being intimately acquainted with the mine and its surroundings I can endorse all that Mr. Reynolds has said as to situation and other advantages. The proximity of the mine to Wheal Kitty at the east, and of Polberrow Consols at the north—mines which have yielded immense quantities of mineral, particularly tin—almost guarantees the success of New St. Agnes, prosecuted fairly and vigorously under the management of such an able agent as Captain Wm. Vivian, who is in command. The new company came into possession under favourable circumstances, having the advantage of all the works done by their predecessors in shafts, drifts, &c., and I hope that by the application of a small capital in operating on the lodes already discovered and that shall be discovered the mine will ere long rank among the dividend mines. R. SYMONS.

August 16.

WEST FRANCES MINE.

SIR,—I was rather surprised when at West Frances meeting, on July 26, to find the skill and ability displayed by Capt. Wm. Rowe was not recognised in the way it deserved, also to find an intimation that it was desired to reduce his salary. Perhaps the adventurers are not aware that through the numerous engagements of Capt. Josiah Thomas almost the sole management falls on Capt. Rowe's shoulders, and to what extent the adventurers are indebted to this energetic agent. Few can be aware that the adventurers are indebted in a great measure to Capt. Rowe for the reports read at the meetings by Capt. Josiah Thomas, also that the tribute department is entirely under his guidance. I am quite sure myself his wide experience at Calvadnack, Wheal Seton, and New Hendra—the latter of which is still under his management—cannot but make his services exceedingly beneficial to the West Frances adventurers, and, as one of the number, I should be glad to see his talents recognised in a fitting manner. FAIR PLAY.

VALE OF CONWAY MINE.

SIR,—On a perusal of your interesting Journal of August 12 I was much pleased to find that a company is about to be formed to develope the above undoubtedly rich property, the result of whose enterprise it would appear cannot but be crowned with success, for as I was passing through the lovely vale a short time since my attention was called to the highly mineralised nature of the surrounding strata. The neighbourhood of Llanrwst is as yet in its infancy so far as its lead mines are concerned, for with the already celebrated Llanrwst Mine, which is in full work, there are besides several others which are being wrought quietly, though profitably. Having had my attention directed to the above property, I called that way in my tour through the Vale, and was astonished at the richness of the same, for here at every point, without the least exaggeration, there is a very productive lode, varying in value from ½ ton to 1 ton of lead per fathom. I strongly recommend this grant to those who wish to try their hand in a good concern, for the half-dozen lodes which the property contains are all more or less productive, having been opened upon with profitable results at the adjoining mines. The sett is also extensive, has a good road leading to it, is only distant about 2½ miles from the town, timber is abundant, lodes are numerous and rich, therefore I am of the belief that with the capital specified this mine will be speedily brought to a paying state.

MINER.

"DOWSING."

SIR,—In the Report from Cornwall, in last week's Journal, the very proper and pertinent question was asked—"Cannot we have a systematic enquiry into the dowsing business?" Now, Sir, I think if it is a fact that lodes can be discovered by dowsing, it ought to be recognised and adopted by all mining men, and let us forever give up our present slow and costly system of costeaning; or, if dowsing is an imposture, then it ought to be exposed as such. Now, I think all parties will agree with me that it would not be wise or just to ask you to throw open your columns again for another controversy on the subject, as it is more than likely that it would still remain an open question between the believers and non-believers, and I think a practical test will do more in one day to settle the affair than twelve months writing in the Journal. There are districts in Cornwall where a dozen lodes are known to exist within a half-mile of each other, and I think it would be a fair test for the professional dowsers to meet on some spot to be selected by another party, and let all the dowsers cross the same ground, and on the same path; and, if they succeed in pointing out where pits should be sunk to open on the backs of the lodes, then they will prove dowsing to be a very important subject for the study of mining men in the future, and if they fail then dowsing will have to take its place among the superstitions of the past. Of course, a test of the above description will be attended with some little expense, as there would be men required to sink the pits, and I suppose it will be necessary to have a dinner on the affair. Then let there be a day and place appointed where a certain number of dowsers shall meet an equal number of others who have a desire to see the subject practically tested, and if the dowsers succeed in finding the lodes then let their expenses be paid by the opposite party, and if they fail then they shall pay the expenses of the day. I should judge from the number of correspondents who took up the cudgels in favour of dowsing a few months since that there will be no difficulty in getting a score who will be anxious to vindicate the honour of their ancient profession, and I shall have no objection to be one of an equal number on the other side to get this troublesome question settled. If any member of the dowsing fraternity feels inclined to accept the above terms you, Mr. Editor, are at liberty to give them my name, and I will endeavour to form a party to meet them at the earliest opportunity. EAST CORNWALL.

ARTHUR DEAN.—It is with great regret that we have to record the death, at the age of 63, of our esteemed and well known correspondent Mr. Arthur Dean, which took place on June 15, at Gavi, Liguria, Italy. The amount of his useful work in connection with mining exploration and engineering has been very great, and his exertions in connection with the discovery of gold and the development of the gold mining industry in Wales will long be remembered. The announcement made at the British Association meeting in 1844 by Mr. Dean, and published in the Journal of Oct. 26 of that year, that he had recently discovered the existence of a complete series of gold veins in the lower silurian formation of North Wales, comprising the whole Snowdonian group of strata in Carnarvon and Merionethshire brought forward, as is usual in all such cases, one or two claimants to priority as discoverers, but the discussion which followed, and which may be regarded as conclusive since the facts were then fresh in the memory of all the disputants and capable of ready verification, left no doubt that the undivided honour of the discovery was due to Arthur Dean.

Although gold mining in Wales has not hitherto been remunerative to capitalists who have connected themselves with it, there can be no doubt that judicious and systematic operations on a large scale—as all gold mining operations must be—would yield profitable results, and be the means of opening up a very important industry. In announcing his discovery, Mr. Dean stated that the veins were very abundant, and where they cross other mineral veins of an older formation they frequently contain rich deposits of gold mixed with lead and other ores. Beautiful specimens of the ores were exhibited before the British Association, some of them containing from 60 ozs. to 200 ozs. per ton, and the author pointed out that it is not a little remarkable that these ores are found in precisely similar strata to those composing the eastern flank of the Ural Mountains, from which the great supply of Russian gold is obtained. The opinion expressed by Mr. Dean in 1844 is equally tenable at the present time—that when the ores of gold found in North Wales are better understood a very considerable amount of gold will be obtained in that district. From the date of his discovery until quite recently the communications of Mr. Dean have constantly enriched our columns, and the many who have profited by the information he has communicated, as well as all who knew him, will long feel his loss.

Meetings of Public Companies.

ENGLISH AND AUSTRALIAN COPPER COMPANY.

The half-yearly general meeting of shareholders was held, on Thursday, at the Cannon-street Hotel,

Mr. R. A. ROUTH in the chair.

Mr. CHARLES B. ROGERS (the secretary) read the notice calling the meeting, and the report of the directors, which has been circulated amongst the shareholders, was taken as read.

The CHAIRMAN said that at this half-yearly interim meeting there was really very little business to be transacted. Ordinarily at these half-yearly meetings the business to be transacted was the declaration of an interim dividend, but on the present occasion the balance standing to the credit of the profit and loss account (about 2000*l.*) was carried forward. The reason why that amount was carried forward instead of being divided might be explained in a few words. He need not point out that the past six months had been a period of great depression, and the copper market had been affected equally with the market for all other metals. Last February when they met copper was quoted at 88*l.* and 89*l.* per ton, whilst at present the outside price was 76*l.*, and even at that price it was impossible to get rid of any large quantity. Therefore he thought, on the whole, the shareholders might congratulate themselves upon the result which had been obtained, and he was hopeful and sanguine that at the end of the year the directors would be able to present a much better balance-sheet. The amount of work done was rather in excess of the amount of work done in the previous six months, but until the furnaces were blown out and the accounts made up at the end of the year it was impossible to estimate with accuracy what the result of the year's working would be, or what would be the balance at the credit of profit and loss. No blame whatever was to be attached to the manager, who had bought the ores as closely as he possibly could. There had been great competition for the ores on the other side. The Government of South Australia—and this was a pleasing feature—had passed a Bill for working a railway to the north, which would open up a country very much like our Cornwall—a fine copper-producing country; and he believed that when this was achieved there would not be so much competition, nor would the ores command so high a price as now. He had said he hoped at the end of the present financial year to be able to present a satisfactory report to the shareholders, but at the same time he did not wish to hold out too sanguine hopes, as it was impossible to say what might happen between now and then; but at the same time he could not help thinking that the present period of depression must before long come to an end. The last few months had been an anxious time for the directors; the board had done their best to keep down the expenses, and instructions had been sent out to the manager to be exceedingly cautious in all the purchases he made. The accounts, as far as they went, might be looked upon as perfectly accurate; but, as he had said, until the end of the year it was impossible to estimate exactly what the result might be. He had no resolution to bring before the meeting, but should be happy to answer any question which any shareholder might wish to put.

A SHAREHOLDER asked how it was the accounts were not signed by the auditors, and also why the names of the directors were not published in the report?

The CHAIRMAN pointed out that the present accounts were only approximate accounts for the information of the shareholders, and therefore were not examined and signed by the auditors. When the accounts were made up at the end of the financial year they would be properly audited and signed by the auditors, and the names of the directors would also, as usual, be given at the head of the report.

In answer to a further observation, the CHAIRMAN said that 1600*l.* had been added to the reserve during the year; last year it stood at 11,010*l.*, and now at 12,644*l.* The financial position of the company was very strong, and the great anxiety of the directors was to increase the business, and also to do business at a profit, because no one would be satisfied unless the business was done at a profit. He might also mention that the directors were deeply interested in doing business at a profit, because they had a percentage on the profit made, and if the profit were not made the directors did not receive the percentage. Therefore, if the directors could fairly and legitimately earn a dividend they would be delighted to do so, but at the same time they had a duty to perform, which was to protect the interests of the company generally, and not divide that which could not be fairly and properly divided. The future prospects of the company were good and sound in every possible respect, and an increase in the price of copper would make all the difference to the company. The stock of copper had been taken at 75*l.* per ton, whereas the market price of the day was 76*l.* per ton.

A SHAREHOLDER said he believed that during the interruption of the telegraph some time since the manager bought ores which yielded a loss.—The CHAIRMAN said that such was the case, but during the interruption of the cable the manager was obliged to buy a certain quantity of ore. At the present time if there was a change of only 3*d.* in the unit it was immediately telegraphed to the agent, who had the information in time to make his purchases accordingly.

A SHAREHOLDER asked for some information regarding the Ballard Mine, in New Caledonia?

The CHAIRMAN said there had been received from New Caledonia 700 tons during the half year, and the manager advised that the mines were very rich, and would yield a large supply of ore. At present labour was somewhat scarce, but there was reason to hope that with increasing immigration into the colony that would be overcome. He went on to say that the directors had not in any way pushed the sale of the copper in hand, hoping that prices would go up. Referring to the large sales by public auction of copper which had recently taken place, he said it still remained to be seen whether that was an advantageous way to dispose of it; at present he was disposed to think it was not.

A vote of thanks was then passed to the Chairman, and the meeting broke up.

SAN PEDRO (CHILI) COPPER MINING COMPANY.

An extraordinary general meeting of shareholders was held, on Monday, at the offices of the company, St. Helen's-place,—Mr. W. DUNN, in the chair, for the purpose of confirming the following resolution passed at the meeting held on July 24, namely:—

That the Articles of Association be amended by the addition of the following clauses:—103. The debentures issued under Article 47, clause (*d*) of the company's Articles of Association having been discharged by the allotment of shares in pursuance of Article 101, with the exception of debentures for sums amounting in the aggregate to 2675*l.*, the directors are hereby authorised to borrow at any time or times on behalf of the company, and for any of the purposes thereof, upon the security of a mortgage or mortgages of all or any part of the property and assets of the company (exclusive of the unpaid share capital for the time being), or of debentures, bills of exchange, promissory notes, or any other security, and upon such terms and conditions as the directors may think fit, any sums of money, so that the same, together with the amounts of the debentures now outstanding, or such of them as shall for the time being remain undischarged, and any sums which may hereafter be borrowed for the purpose of repaying such debentures or any of them, shall not exceed in the whole the sum of 15,000*l.*—104. With respect to any sums to be borrowed under the preceding clause, and whether the same shall have been then already borrowed or shall be then about to be borrowed, the directors shall be at liberty to enter into any arrangements for the repayment or discharge thereof, in the manner prescribed by Articles 101 and 102 of the Articles of Association.

At the meeting held on July 24 it was stated that the machinery had been set to work, and everything had been done for the purpose of making the mine prosperous; but, unfortunately, the mine fell in, and although it was perfectly well-known that there was good ore, yet up to the present time they had not been able to hit upon it. It was expected that every mail would bring an intimation that the vein of ore had been hit again, and would be worked. The directors were of opinion that every means should be used for the purpose of reaching and working the ore, but for this purpose further funds were necessary. It is believed that Mr. Phillips, who succeeded Mr. Kitto in the management of the mines, is an able man, and competent to secure and carry out everything which was necessary for the benefit of the mine. There had been a sum of between 500*l.* and 600*l.* lost, the horse on which the money was being conveyed up to the mine having run away, and was not recovered until all the money was stolen. In the course of a discussion which ensued, Mr. Wilson gave some interesting particulars relative to the mine; he said that the mine was in full and profitable working order at the time it caved in, and they were now driving round to get at the point which was productive. Referring to the capital which was proposed to be raised, Mr. Wilson pointed out that the present authorised capital was 75,000*l.*, and 10,000*l.* which it was proposed to borrow would make the authorised capital 75,000*l.*, as 5000*l.* would go in payment of the debentures already issued, but not converted by reason of the deaths of parties. It was believed that the balance of cash of 5000*l.* would go a long way towards proving the success or failure of the mine. At present they were working the 47, which was worth 1 ton of 25 per cent. ore per fathom, which ought to represent about 19*l.* per ton if copper were at an ordinary price, but mixed with poorer ores it represented about 10*l.* at those low prices. In the 88 the stope in the back was worth 7 tons and in the bottom 4 tons, the first being 20 per cent. and the second 23 per cent. ore. In the 110 there were good stones of ore, but not sufficient to value, and the 110 was now suspended for the purpose of husbanding the resources of the company for the sinking of the shaft. At the 122, which was driving at the cost of 50*s.* per fathom, they were trying to get under the point in the 88 where the ore was found; they had thus the 47, the 110, the 122, and the 150, in all of which they were going in the same direction, and in all which there were indications of getting the ore which was in the 88. In driving on the 150 they had come upon ore which was nearly solid, but which was so much mixed with mundic that it could not be put at a higher value than 1½ ton of 10 per cent. copper ore to the fathom. In Cornwall mundic was generally looked upon as the precursor of large deposits of copper, and this discovery tended very much to prove that they were on the top of a deposit of ore, but had not gone down deep enough. This was a mine which, in point of fact, returned to the owner a vast sum of money, and since the company started 18,000*l.* worth of ore had been sold from it, although it was hampered with insufficient capital. The produce in March, April, and May of ore was about 180 tons, of the value of about 10*l.* per ton, and it is believed that, besides this, there is 1500*l.* *in transitu*, so the company was not entirely without funds to prosecute the mine. A larger number of men ought to be employed, in order to arrive sooner at the various points proved. In reply to further questions, Mr. Wilson said that after having paid all the debts there would be 5000*l.* for the purposes of the undertaking more than they had now, which would enable a sufficient number of men to be put at work. Materials to the amount of over 400*l.* had been just sent out; nothing was owing out there, and he calculated that, with this 10,000*l.* everything could be done which was required. The debts in this country were small. The ore was sold at Chanaral and Valparaiso: none had been sold in England. The net loss on the mine now amounted to about 300*l.* a month. At present there were about 70 men working on and in the mines, whereas there ought to be 120, and his suggestion was to put on as many men as possible without interfering with each other, for if the company had capital the worst economy was to stint labour. Some further discussion ensued amongst the shareholders, and the general opinion seemed to be that the wisest policy was to adopt the recommendation of the directors, and after the formal resolution for the adoption of the report had been put to the meeting and carried, a further resolution was put and carried, amending the Articles of Association in the manner given above, subject to confirmation at a second meeting.

The CHAIRMAN, Mr. W. Dunn, formally moved the confirmation of the resolution given above.

Mr. CUTBILL seconded the motion, and asked what length of time the debentures would be issued for? He said he asked the question because he hoped they would not be issued for very short periods.

Mr. WILSON said the debentures would, in all probability, be issued for three years—certainly not less, and probably for one or two years the debenture-holders would have the option of converting the debentures into ordinary shares at par.

The motion was then put and carried.

A vote of thanks to the Chairman closed the proceedings.

WEST GODOLPHIN MINING COMPANY.

A general meeting of shareholders was held, on Tuesday, at the offices of the company, Great St. Helens,

Mr. ROBERT WILSON, F.G.S., in the chair.

Mr. CHARLES THOMAS (the secretary) read the notice convening the meeting, and the minutes of the preceding one, which were confirmed.

The accounts showed a debit balance of 595*l.* 2*s.* 4*d.* The labour costs, merchants' bills and machinery for March 4, April 1, April 29, May 27, and June 24, amounted to 688*l.* 6*s.* 8*d.*, the royalty to 58*l.* 0*s.* 4*d.*; the London charges (five months), 31*l.* 10*s.*; the committee fees, 13*l.* 13*s.*; and the travelling expenses, 8*l.*; together, 3520*l.* 18*s.* 2*d.* The sales of tin ore for five months amounted to 2320*l.* 14*s.* 6*d.*, and an old iron sale 14*l.* 16*s.*; the discounts were 20*l.* 10*s.* 9*d.*, and the balance brought forward from last account 569*l.* 14*s.* 7*d.* The adverse balance up to the date of meeting was 657*l.* They have employed on the mine—118 men, 20 boys, and 19 girls.

The CHAIRMAN said that since the last meeting a 15-in. cylinder engine and boiler, driving 16 heads of stamps, had been purchased and erected. These had been at work four weeks. Previous to their erection the sales had dropped to 8 tons 19 cwts. in June, and 5 tons 12 cwts. in July. Last month the sale was 13 tons 2 cwts. The deficiency in the sales and the cost of machinery had caused the deficiency, otherwise the state of the company would have been about the same as last year—neither profit nor loss. It was hoped that the next month's sales would about meet the costs. About 200*l.* more would be required for laying out the dressing-floors, and the sum of 200*l.* in order to erect a new boiler, which would have an economical effect on the future working of the undertaking. The agent states that about 100 tons of tinstuff a week are now being stamped, and he hoped that next month's sale will be quite 14 tons, or perhaps more. Of course, he could not give a reliable estimate of the future of the mine until the stamps had been more fully tested. Wilson's lode has, however, greatly improved, and the prospects are very encouraging.

Mr. T. E. W. THOMAS enquired how much cost was chargeable against the 550*l.* for the tin sold on Saturday?

The CHAIRMAN said that 612*l.* costs were payable this week, which, however, included 60*l.* for machinery. He hoped they would get 15 tons in the current month, which would meet cost. The accounts were charged up as closely as possible, and every debt was stated in them; indeed, he would not be connected with a mine in which the accounts were not so kept.

The SECRETARY said that according to the report of Capt. Pope the steam stamps were consuming about 1 ton of coal per day, and that when the engine had been running a little while probably a little less would suffice.

Capt. GLADSTONE, in reply to Mr. Thomas, said that although the new stamps were now completed he did not anticipate that they would get much more than 13 tons in the current month, as the dressing-floors were not finished; the return, however, would depend upon the quality of the tinstuff they break.

Mr. THOMAS assumed that with increased appliances the returns would increase.

The SECRETARY thought that might be relied on; they expected to average at least 15 tons per month for the next six months.

The CHAIRMAN said that even with the present low price of tin they would be able when their dressing floors were finished to work at a profit, but at present they had actually 657*l.* to provide for. They would sell about 100*l.* worth of copper in a few days, but he thought a call of 3*s.* per share should be made. There had been no call for 16 months, and there were no arrears, the only five shares upon which arrears existed having been forfeited some time ago.

Mr. THOMAS thought it would better meet the wishes of the shareholders if it were made a 2*s.* 6*d.* call, which amount would certainly meet their present requirements, and he believed that it would probably be the last they would have to make.

The report and accounts were adopted, and a call of 2*s.* 6*d.* per share was made. It was stated that the steam-power is capable of driving 24 heads of stamps, although at present only 16 are being worked.

The meeting closed with a vote of thanks to the Chairman and committee.

WHEAL UNITY WOOD MINING COMPANY.

A three-monthly meeting of adventurers was held on Thursday, at the mine,—Mr. HENRY MICHELL (purser) presiding.

The CHAIRMAN read the statement of accounts, from which it appeared that the labour costs for the three months ending June amounted to 1479*l.* 16*s.* 2*d.*; the merchants' bills to 762*l.* 14*s.* 11*d.*; dues, 55*l.* 19*s.*; and bankers' charges, 39*l.* 5*s.*: making a total of 2337*l.* 15*s.* 1*d.* The credits were—for tin, 1186*l.* 1*s.* 1*d.*; for copper, 47*l.* 1*s.* 11*d.*; and arsenic, 109*l.* 15*s.* 6*d.*: total, 1342*l.* 18*s.* 6*d.*, showing a loss on the three months working of 994*l.* 16*s.* 7*d.* This, added to the balance from the last account, made a total debit of 1537*l.* 7*s.* 2*d.*

The agents, in concluding a very satisfactory report showing that there were several important points in the mine, said "It will be seen from the statement of our accounts that our returns of tin for this quarter have decreased, principally owing to several pares of tributers having left the mine in consequence of the present very low price of tin. There are large reserves of tin ground both east and west of the engine-shaft, which, with a moderate price, can be worked with advantage to the mine. We would recommend the suspension of all exploring operations during the present low price of tin, with the exception of the sinking of the engine and Tonkin's shafts, and driving the bottom level."

The CHAIRMAN said they had hoped at the last meeting that they would have been able to present a more favourable balance at this account, but some of the ground at the 60 fm. level, which they then calculated would produce large quantities of mineral on stoping, soon fell off in value; consequently their sales had not been so large as they anticipated. Besides this, the price of tin had gone down about 3*l.* per ton, and this would account for the large loss they had made.

A call of 2*s.* 6*d.* per share was made towards the reduction of the deficit.

Some discussion took place upon the concluding recommendation in the agents' report, to which Captain BEAGLEHOLE took strong exception. He objected to any suspension in driving the 50 fm. level, and argued that the prospects of the mine did not warrant them in sinking Tonkin's shaft further until they had extended the end.

The CHAIRMAN explained that in making their recommendation the executive were actuated by two or three considerations. One was that the ventilation in the 50 was very bad, and as they proceeded it would be getting worse. If they cut a rich lode there Tonkin's shaft must ultimately be broken down to that level for ventilation and for the discharge of the stuff, and it was thought advisable by the agents, after a long consultation, that as this shaft was something like 40 fathoms in advance of that end, and down to the 30, which had been drained by the 50 fm. level end, that by taking up the shaft and continuing to sink they would be developing the lode much earlier than they could possibly do by driving the level. The ground that had been taken away adjoining this shaft had been very productive of tin, and in making the alteration they had two objects in view—the opening up of other tin ground and the development of Williams's lode. But if it was considered by practical men present that they had taken a wrong course he was quite sure the agents would be very glad to discuss the matter with them, and to resume the end again if it should be thought advisable to do so. But for his own part he was certainly of opinion that they had adopted the course that would lead to the earliest and best results.

Captain BEAGLEHOLE did not see that there was any prospect of bringing down the shaft. If there were not more than 5 or 6 fms. to be driven on that lode he did not see the necessity of making an outlay of 400*l.* or 500*l.* to drive one cross-cut, unless the object for which the outlay was to be made was proved.

Capt. TREMAYNE bore out what had fallen from the purser, but said they had no desire whatever to press their views upon the adventurers. They were quite ready to do that which was generally thought to be most desirable. He added that by suspending the operations according to the recommendation in the report they would save about 100*l.* a month.

Capt. BEAGLEHOLE said Capt. Tremayne had put down the value of the lode in the engine-shaft as worth 5*l.* per fathom, but he ventured to say it was not worth 2*l.*—Capt. TREMAYNE explained that his valuation applied to the length of the shaft, and not to any particular part of the lode.

Capt. BEAGLEHOLE stated that the last time he saw the lode he valued it at 12*l.* per fathom, and they had not a point in the mine worth more than 20*l.* per fathom.

Capt. TREMAYNE: Then you certainly do not know how to value.

Capt. BEAGLEHOLE: I consider your reports are highly coloured.

Capt. TREMAYNE: And I will undertake to justify every statement I have made.

Mr. HAWKE said that only on the previous day he had the mine inspected by one of the most independent men in the county, and his report was that the lode in the engine-shaft was worth fully 50*l.* per fathom. (Hear, hear.)

Capt. BEAGLEHOLE reiterated his opinion, but Mr. WOOLCOCK said he was quite sure the large majority of the adventurers had every confidence in the correctness of Captain Tremayne's reports, as well as in his management of the mine. (Hear, hear.) He hoped nothing would be done to hamper him.

Eventually it was decided to leave the matter of resuming the end in the hands of the executive, and, the report and accounts having been passed, the meeting separated.

PRINCE PATRICK LEAD MINE.

The half-yearly general meeting of shareholders was held at the office of the company, Seel-street, Liverpool, on Monday,

Mr. JOHN WALKER in the chair.

Mr. T. HUGHES (the secretary) read the notice convening the meeting:—

The directors' report was read as follows:—

The directors regret that they are not in a position at the close of this half-year to present so favourable a balance-sheet as heretofore. This disappointing state of things has arisen through circumstances over which the directors had no control. The shareholders will be aware that during the greater portion of the past six months the miners had been out on strike in an endeavour to maintain an old custom of working six hours only out of the 24, and which was contrary to the principle carried out in all other parts of the kingdom, with the exception of the Halkin Mountain, where our mines are situated. The directors were satisfied that this six-hours system worked against the interests of the company, and of the miners also, and they determined to put an end to it by adopting the eight-hours system, as carried out elsewhere. The directors are glad to state that the strike is now at an end. After a long struggle the men saw that it was to their interest to agree to the eight-hours system and return to their work. Although it is, of course, a matter of regret that in consequence of the strike the position of the mine is not so good as heretofore; still, the directors feel assured that under the new mode of working they will be able to effect a considerable saving in the cost of developing the mine, and which will soon make up for the loss sustained during the past six months. The directors also found it necessary to change not only some of their workpeople but likewise their captain, and they have selected from amongst the applicants for the situation Capt. H. B. Vercoe as resident agent at the mine, and have appointed as under agent Capt. William Roberts, who has been in the company's employ from the first starting of the mine. Capt. Vercoe has been strongly recommended to the directors, and brings with him excellent testimonials, and there is every reason to expect that the selection will prove a good one for the company.

The directors beg to further state that they have taken the opportunity during the strike to have a general overhaul of the engine and boiler, and the necessary repairs made good. They have also thoroughly repaired the main engine-shaft, enlarged the reservoir, made new launders to carry the water to same, built new smithy, joiners' shop, and powder magazine, covered over the dressing-floors and improved same, and have erected a new weighing machine, &c., all of which work is now completed, and will last for years. The directors feel confident that with the improvements made and the new management adopted there will be effected a considerable saving in the future working of the mine. The shareholders will perceive by the balance-sheet that the reserved capital has been greatly reduced, owing to the non-sale of ore and the expense incurred in the new buildings, &c., before mentioned, and, as matters are at present, it would not be prudent to declare a dividend this half-year unless credit be taken for ore in stock, dressed and undressed—a course which the directors do not consider it prudent to adopt, and they trust that the shareholders will approve of their decision. The directors regret that the captain's report now presented to the shareholders is not so favourable as the one read at the previous half-yearly meeting, but still the improvements in the deep levels, east and west, are good, and there is every reason to expect that before the next half-yearly meeting the directors will be in a position to report more favourably of the prospects of the mine. The retiring directors are Mr. John Walker and Mr. D. P. Rule, who offer themselves for re-election.

The agent's report was read, as follows:—

Aug. 10.—Having been appointed resident manager of these mines on July 15 last, and commenced my duties on Aug. 1, my time since then has been fully devoted to a careful inspection of your property at surface and underground, with a view to giving you a detailed report for the general meeting, according to your instructions. The following is my report:—Pant Vein: The engine-shaft has been sunk to prove this vein to the 170 yard level, and at each successive level, from the 80 to the bottom, the lode has been continuously productive of lead. The present workings on this vein are in the 170 west, about 5 fms. in arrear of the forebreast, and about 15 fathoms west of engine-shaft. At this point there are four men stripping down a portion of the lode left standing on the hanging-wall side of the level, and which is producing leadstuff of good quality, worth about 1 ton per fathom. This discovery, being in the bottom level of the mine, may prove to be of great importance, particularly if this part of the lode continues parallel with your drivage to the end, and at present it seems likely to keep so. I regard the driving of this level west as a first class trial, the 140 having been very rich only a short distance in advance of the 170, and, on resuming the drivage, we may reasonably expect to cut the same run of ore as the old workers found in the shallow levels, and from which they raised an abundance of lead.

Great North and South Vein: The 100 yard level is driven south-west of Hughes' shaft about 55 fms.; the first 25 fms. (I am informed) through one of the finest deposits of lead ore ever seen in this district. The last 30 fms. have been unproductive of lead to value, but the lode in the end is composed of precisely the same ingredients as where it was so rich (excepting the lead), and I confidently believe that further prosecution at this point must lead us to another deposit of lead equally as rich as the one from which you have been getting your returns and profits; this lode is of such immense size and strength, and the driving being principally in the middle of it, there may be now within a short distrance on either side or under the sole of the level (on the footwall of the lode) large bodies of ore. This cannot, however, be fully proved until a new shaft is sunk from the surface to the 100 yard level for winding and ventilation. To this point I will again refer.—Sump: At a point in the 100 yard level, about 30 yards north of Hughe's shaft, a sump is being sunk perpendicularly to reach the footwall of the vein. This sump is at present unproductive of lead, and we look for no change until we get near the footwall, where, judging from what I have seen in other districts in similar strata, a good bed of ore should be found. There are two stopes being worked in the roof and sides of the 100 yard level south and west; the lode is somewhat irregular in profuse, but, on the whole, may be valued at 35 cwts. of lead per cubic fathom. In the 100 yard level, north of cross-cut, a trial sump is being sunk; here the ground is rather hard, and the lode produces occasional lumps of ore, but not enough to value. Having described the principal points now being wrought, I beg to offer you my suggestions as to the future workings. There are two or three other points in the property well worthy of being developed—Fairclough shaft, &c., which shall have my attention in due course. In order to economically prove the great lode in the vicinity of the present end of south-west level at the 100 yard it is imperative that a new shaft be sunk from the surface to meet the 100 yard level end. The air in this part of the mine is very defective, and the level is a very bad one, having been driven for upwards of 50 yards up a steep gradient. It is almost impossible to lay a tram-road, and the present system of conveying the stuff from the workings in wheelbarrows is very slow and expensive. After the shaft is sunk and made ready for winding, this section of the mine can be worked at one-half its present cost: under the present mode it cost as much or more in wheeling, filling, &c., than it does to cut the ground. I can make some improvements and effect some saving in this department while the shaft is being sunk, but the mine cannot be worked as it ought until the shaft is completed.—Washing-Floors: The appliances you have for washing and cleaning the ore are very imperfect, consequently the cost of making the ore marketable must be very high. As you have not sufficient water for driving washing machinery, there is only one way to remedy this—to purchase a portable engine. I, therefore, strongly advise you to get an engine of 6 or 8 horse power, with as little delay as possible. This would work all necessary appliances for washing the ore, and pump the water back again (the latter is costing us now 3*s.* per day). I should then attach jiggers, rotary-sieve, and machine for getting rid of the clay. If you were to get a good second-hand engine the whole could be erected at a small cost, and I believe I could get ore enough out of the waste heaps to pay for the engine and machinery in six months after their completion. There is now in the ore-shed about 14 tons of lead towards another sampling. In conclusion, I would remark that although your mine is evidently not so rich as it was formerly, yet I see no cause for anxiety as to the ultimate result of working. Such a vein as the Great North and South Vein cannot, in my opinion, fail again to produce large quantities of lead and corresponding dividends.—H. B. VERCOE.

Mr. HANSON said there were one or two points in the captain's report that he did not quite understand—the direction of the present driving in the deep level, and also the position of the proposed new shaft.

The MANAGING DIRECTOR, in reply to the question, pointed out the position of the proposed shaft, which would be some 150 yards or thereabouts south of Hughes's shaft, and would not only give thorough ventilation, which was much needed in that portion of the mine, but would also enable them to work the mine at a greatly reduced cost.

Mr. HANSON expressed himself satisfied. He could see that the proposed shaft was necessary for the drawing of ore, &c., and he would like to know how long it would probably take to sink this shaft to the 100 yard level.

Mr. HUGHES replied that it would take some four or five months at the least to carry the shaft down to the 100 yard level, but every effort should be made to complete the work as speedily as possible. He then gave a full explanation of the strike and the causes which had brought it about; and stated that now that the vexatious delay was over, and everything satisfactorily settled with their workpeople, he hoped soon to have the mine once more in its former paying state. It was, of course, a great disappointment to them not to get the usual half-yearly dividend, but, after all, he felt sure that the strike would prove to have been indirectly of some benefit to the company, inasmuch as during the time the miners were idle many objectionable practices had been discovered, which had worked greatly against the interests of the company. He did not think it necessary to say any more on this head, as the directors had already made such changes as would tend to a saving in every department. As regards the falling off in the yield of ore in the 100 yard level south-west he felt sure it was but a temporary decline, as there had been similar weak points in this level once or twice previously, and he had no doubt that their captain would soon be in a position to report the lode as rich as heretofore. He was glad to state that the 170 yard level west, on the Pant lode, was producing good lead, and other points on the mine are also improving. Of course it mattered but little from what part of the mine the ore was obtained so long as they were able to bring it to the surface in paying quantities. He begged to assure them that his confidence in the continued prosperity

of the mine was unabated, and the list of shareholders now before them would show that the directors held the largest interest in the concern, and had done so from the beginning. In conclusion, he would beg to again say that they had in the Prince Patrick a valuable property, and their directors were legitimate miners, and would do their duty to the shareholders.

The CHAIRMAN said that he was glad to find that work was now going on with full vigour at the mine, and he trusted that in a few months they would be able to make up for the time lost during the recent strike. He was at the mine on Monday last, and was much pleased to see the improved appearance of the property. During the strike the opportunity had been taken to thoroughly repair the machinery, and a new smithy, ore shed, store-house, &c., had been erected. They had also greatly enlarged the reservoir, and had made new launders for conveying the water to the same, all of which had been greatly needed. He felt no doubt whatever but that under the improved system of working, and aided by the ability of their new captain, the Prince Patrick Mine was destined to yield larger returns than it had done hitherto. It was certainly a matter of great regret that the directors were not in a position to declare a dividend this half year, but under the circumstances it could not be helped; however, he trusted that at their next half-yearly meeting, at which he hoped to see them all again, he would be able to congratulate them on improved prospects and renewed dividends. He would now beg to move that the accounts and reports as presented be received and passed. The shareholders had received copies of the balance-sheet, and were, no doubt, familiar with the items; he would, therefore, suggest that some one of the members present propose the passing of the accounts and reports.

Mr. HANSON said he had much pleasure in rising to this proposition. He was quite satisfied with the reports which had just been read, and he had great hopes that the shareholders would soon be once more in the receipt of dividends. He begged to propose that the accounts and reports as presented be received and passed.

Mr. DENN YOUNG seconded the proposition, which was carried unanimously.

After sundry questions from several members relative to the new system of working the improved mode of dressing the ore, &c., all of which were answered by the managing director to the entire satisfaction of the meeting, it was proposed by Mr. HANSON, and seconded by Mr. YOUNG, that the retiring directors, Mr. John Walker and Mr. D. P. Rule, be re-elected for the ensuing year, which was carried unanimously.

The CHAIRMAN, in conclusion, begged to state that, as heretofore, he would devote all the time he could spare to further the interests of all concerned. He had great faith in the future prospects of the mine, and he had the fullest confidence in the ability of Captain Vercoe, and he trusted that under his management the mine would yield large and profitable returns.

A vote of thanks to the Chairman terminated the proceedings.

EAST VAN MINING COMPANY.

An extraordinary general meeting of shareholders was held at the company's offices, St. Helen's-place,

Mr. WILLIAM PAGE in the chair.

Mr. F. R. WILSON (the secretary) read the notice convening the meeting.

The CHAIRMAN said that before he asked them to confirm the resolutions passed at the last extraordinary meeting he would read them a letter which he had that morning received from Captain Williams. He stated that Temple's shaft was now down 43 fms. 3 ft., and that the 25 fm., level west of cross-cut A, was improving. There had been a great rush of gas and water, and the forebreast shows a good mixture of lead, with strong indications of further improvements. He then read the resolutions passed at the previous meeting increasing the capital from 75,000*l.* to 90,000*l.*, and authorising the issue of 1500 shares *pro rata* to present shareholders at par, and moved that they be confirmed. He continued that they would have observed from the circular convening the meeting that every shareholder on the register that day would be entitled to an allotment, but the meeting would have to determine how long a time should be allowed for acceptance or refusal.

Mr. ST. ALPHONSE enquired whether the whole amount of the shares taken would have to be paid up at once, or whether it would be called as required?——The CHAIRMAN said that that also could be settled by the meeting. The committee were not in want of funds, so that there was no absolute necessity to require the acceptance of the shares, and the payment for them to be simultaneous.

A SHAREHOLDER considered it much preferable that the whole amount should be paid up quickly, as it would save much trouble.

The CHAIRMAN asked Mr. Bolton how that course would meet the wishes of the small shareholders in the Principality whom he represented?——Mr. BOLTON did not think they would object; indeed, he thought they would prefer the matter being done with at once.

Mr. F. R. WILSON thought it would be better in issuing the notices to fix a date for the formal acceptance of the shares, and fix the date for the payment at a short time after. Any who liked to pay on acceptance might do so, but as some might be absent from town when the notices reached them, it would be better not to be so pressing.

The CHAIRMAN said that the notices could be issued early, and it was ultimately agreed that Sept. 5 should be fixed as the last day for the receipt of acceptances of shares, and that the payment of them should be required not more than 14 days from that date. As that would carry the date of payment to Sept. 19, they would be allowing a full month from the present time.

Mr. HARRISON (the solicitor) considered that no formal resolution was necessary to enable the directors to carry out that arrangement.

A cordial vote of thanks to the Chairman terminated the proceedings.

CARDIFF AND SWANSEA SMOKELESS STEAM COAL COMPANY.

The special general meeting of shareholders was held yesterday, at the Cannon-street Hotel—Col. SHAKESPEARE in the chair—for the purpose of passing the following resolutions, as special resolutions:—

"That an indenture made on Aug. 10, 1876, between Thomas Cory and Frank Ash Yeo of the first part, John Cory and Richard Cory the younger of the second part, and the company of the third part, which has been executed for the settlement of matters in difference between the said Thomas Cory and Frank Ash Yeo, John Cory and Richard Cory the younger the vendors to the company) and the company be confirmed, and that the directors be authorised to take all such steps as may be necessary or proper to carry into effect the provisions of the said indenture. That in accordance with the provisions of the said indenture the 3855 unallotted shares of 10*l.* each of the company be allotted to the vendors as paid-up shares in exchange for debenture of the like nominal amount now held by them.

"That in accordance with the provisions of the said indenture, the 22,819 ordinary shares of the company already allotted, and the said 3855 shares to be allotted as aforesaid, be converted into preference shares, with a preferred dividend of 10 per cent. per annum, payable out of the profits of each particular year without any right to arrears in case of insufficiency of such profits in any year, and that the 18,326 existing vendors' paid-up shares be entitled to a deferred dividend of 5 per cent. per annum, payable out of the profits of each particuler year after the payment of the aforesaid dividend, and also without any right to arrears in case of insufficiency of such profits in any year, and that the residue of profits of the company in every year be distributed rateably among all the shares, provided that the powers of the directors under No. 102 of the Articles of Association shall not be hereby affected, but that if in any year, by reason of any sum being carried to the reserve fund, it shall be impossible to pay in full the said preferred and deferred dividends earned in that year, or either of them, then so much thereof respectively as shall so remain unpaid shall be paid out of the net profits of subsequent years next after the said preferred or deferred dividends respectively which shall be earned in those years. And that, in accordance with the provisions of the said indenture, the remaining debentures now held by the vendors be exchanged for debentures payable in three equal portions at the end of 10, 15, and 20 years, from June 11, 1875, together with interest thereon from such date at the rate of 6 per cent. per annum, payable half yearly."

The CHAIRMAN said that the solicitor to the company and the solicitor of the vendors had a meeting, and, after some discussion, came to an arrangement, which had been printed and circulated amongst the shareholders. Since then the form necessary to carry out the proposed arrangement had been signed by the vendors and sealed on behalf of the company, subject to the approval of this extraordinary meeting, which had been called for the purpose of asking the shareholders to approve of what the directors had done. It would be seen that the board had recommended the plan which had been agreed upon, and commenting upon one or two of the prominent features of the modified agreement, he concluded by saying that the agreement was one which the directors thought was advisable should be adopted.

Mr. BELL objected to the agreement, thinking much better terms might have been made. He adverted to the original proposition of the committee of investigation which, if carried out, would, he considered, have been far better than the arrangement now proposed.

Mr. RUSSELL EVANS asked what would be the position of the company if this arrangement were carried out. He begged them to take note of the few figures which he would give them. His plan for settling the difficulty was to cancel the debentures, and he contended that no arrangement could be satisfactory to the shareholders unless that were done, otherwise in bad times the shareholders would be liable to have the property taken over. There was 12,000*l.* to the debit of the revenue at this moment—there was in reality more, but he was deducting the difference of interest. Now, that amount must be wiped off some day or other. He did not want to alarm the shareholders, but they must calculate upon losing 10,000*l.* a month during the current twelve months. Then they must pay 2300*l.* interest to the vendors this time twelve months. There was a credit for horses stores, &c., of 1,200*l.*, but after deducting bills payable and so on, there would be a balance against them of 3200*l.*, so that the total amount against the company would be 39,200*l.*; against that they had cash at bankers' 6400*l.*, calls unpaid 4000*l.* (which he would put down at 3000*l.*), there was a 1*l.* call which he would put down as representing 20,000*l.*, and those three items would amount to 29,600*l.*, as against 39,200*l.*

Mr. WHITE said Mr. Evans had overlooked the item of debtors to the company, 6,000*l.*, which would bring the total up to 45,000*l.*

The CHAIRMAN said that item made a great difference in the position of the company.

Mr. R. EVANS said they must look at what would be the position of the company 12 months hence. There was no chance of an improvement in the coal trade during the present depressed state of the iron trade, and if the safety of the company were considered he thought that nothing short of cancelling the debentures would effect it.

Mr. WHITE said that the desire of the directors had been to carry out in its integrity the plan originally proposed by the committee of investigation, but there were difficulties which could not be overcome. Under those circumstances the directors had to consider what were the best terms to be obtained, and the best terms were those which were laid before the shareholders. The great desire of the directors was to see peace established, and the company working successfully; of course, they could not expect very good results whilst the coal trade was in its present depressed state, but he hoped that when trade was better there would be good returns for the shareholders.

Mr. R. M. WILSON said it seemed that the directors had made the best terms they could, and the shareholders could not do better than adopt them. He moved that the proposed resolutions contained in the notice sent to each shareholder be adopted.——Mr. BODEN seconded the resolution, and referring to the concessions which had been made by Mr. Cory said he thought the meeting ought to adopt the arrangement now suggested.

The CHAIRMAN said that Mr. Cory would not make any concession regarding the debentures; there was no doubt the vendors had shown every disposition to assist the company, and the best thing for the shareholders to do was to work in amity with the vendors.

Dr. SHARPE agreed with the remark of the Chairman; as an additional reason for keeping on terms of friendship with the vendors, he pointed out that those gentlemen were greatly able to influence the sales of coal.

The resolution was then put and carried.

The business of the ADJOURNED ORDINARY GENERAL MEETING was then proceeded with, and after a short discussion, in the course of which the Chairman said that the utmost economy was being exercised, the report and accounts were received and adopted. The retiring directors, Mr. Boden and Mr. White, were re-elected; the auditors, Messrs. Cooper Brothers, were re-appointed.

A vote of thanks to the Chairman and directors closed the proceedings.

LLYNVI TONDU AND OGMORE COAL AND IRON COMPANY.

An ordinary general meeting of shareholders was held at the Memorial Hall, Albert-square, Manchester, on Aug. 11.

Mr. ALEX. BROGDEN, M.P., Chairman of the company, presided.

The directors' report for the year ending June 30 stated that the working of the year, both at Llynvi and Tondu left a profit of 7004*l.* 12s. 1d., which would have been considerably larger but for the depreciation in the value of the stocks, arising from the continued fall in prices. The profits had not, however, been sufficient to provide for the charges in London for management, debenture interest, depreciation, &c., and the balance showed a loss for the year of 13,466*l.* 18s. 6d., of which 6185*l.* 1s. 8d. arose from depreciation in the value of stocks.

The CHAIRMAN, in moving the adoption of the report and statement of accounts, said it was not necessary for him to tell the shareholders that the present was a very trying and difficult time for almost every industry in the country, but more particularly that with which they were associated. They had seen in other companies analogous to their own that they had not been able to pass through the past year without suffering great loss. In the opinion of the board the result of the past year's operations of the company has been as satisfactory as they could have expected it to be. It was obvious to anyone that with a continually declining market, and inability to secure reduction in wages and in the cost of material, only one result could be arrived at. There had been a very severe depreciation in the prices of the articles they had to sell, and it was when they had been established that the workmen had consented to a reduction in wages. When they could show a reduction in the cost of working they could show that the concern was in itself on a good footing, and one which in ordinary times, and with a better state of trade, would have as good a chance of reviving and making a profit as any other similar concern. The profits would have been 13,000*l.* except for the shrinkage in price of stocks which they had in hand at the end of the year. A little change in the value of the stock would give them back the whole of the loss by shrinking, which was represented in the accounts, and instead of being a loss would be a gain. It was his opinion that the prices of coal and iron had got to the lowest point which they would attain in this period. There had been a depreciation in price, but no diminution in wages since February. Arrangements were in process, however, for reducing the wages of ironworkers in South Wales; and when they were settled the employees of the company would cheerfully acquiesce in any reduction which might be established in South Wales; and he thought that would enable the company, at any rate, to hold its own.——Mr. F. BRADY seconded the motion, and after a few questions had been asked and answered it was carried.

Mr. E. Barchard and Mr. K. Needham were re-elected directors of the company, and a promise was given by the board to fill up one of the vacancies caused by resignation or death by appointing Mr. Swallow (Manchester) as a director.

SOUTH CROFTY MINING COMPANY.

The three-monthly meeting of the adventurers was held at the mine, on Tuesday,—Mr. H. LEAN (the purser) presiding

The accounts showed an expenditure in labour costs for three months, ending May, 2294*l.*; in merchants' bills, 1003*l.*; in bankers' charges, &c., 104*l.*: making a total of 3401*l.* On the other side, 473 tons of copper ore realised 1698*l.*; 33 tons of tin, 1214*l.*; and 61 tons of arsenic, 325*l.*; making a total of 3237*l.* The lords' dues had absorbed 67*l.* of this amount, so that the loss on the three months' working was 231*l.*, and the total debit balance, after adding the balance from the cash account, 1296*l.* The agents' report showed the mine to be well worthy of prosecution.

Capt. THOMAS, the manager, said that during the last 4½ years, since he had had the management of the mine, they had returned about 750 tons of tin, besides the copper, and that if tin had continued at the same prices formerly they should have made a profit on their actual sales of more than 20,000*l.* And besides this, if tin had not fallen so low in price the returns of tin in South Crofty would have been considerably larger, as they were now obliged to leave their tin ground of lower quality idle. He also stated that during the past 18 months only one call of 10s. per share had been made, amounting to 468*l.* 10s., and that with the exception of three mines (East Pool, Tincroft, and Dolcoath) South Crofty had done better during the great depression than any other mine in the neighbourhood. (Cheers.)

Mr. RODD, the late purser, remarked that if the prices of tin and arsenic had been as at the last account the mine would have paid costs.

It was then decided to make a call of 10s. per share.

In answer to a question by Capt. ABRAHAM JAMES respecting the average wages of the tutworkmen, the MANAGER replied that the wages were not high.

Mr. RULE having expressed an opinion that the price of coal was enormous, Capt. Thomas informed him that the price he referred to was for coal bought in March last.

Mr. ALFRED RICHARDS said he could have sold Mr. Rule coal of a certain quality at that date at a much less price, but it would have been useless and unburnable.

Mr. RODD had one subject to bring before the meeting—the boring machine. He found the boring machine was a perfect success at Dolcoath, and he thought it a matter worthy of the consideration of the adventurers of South Crofty, the lodes in that mine being very large, and, if Capt. Thomas and the shareholders approved of it, the sooner one could be ordered the better, for the ground which otherwise would take twelve months to drive could be driven by the machine in considerably less than half that time.——Mr. REED enquired the cost of the boring machine?——Capt. THOMAS said two machines would be required, which would cost, probably, about 600*l.*

Capt. A. JAMES enquired the size of the engine required to supply the machines with air?——Capt. THOMAS replied that about a 10 or 12 in. cylinder engine would do.——Capt. JAMES thought it best that the machine should first be thoroughly proved in Dolcoath, but Capt. THOMAS said he was satisfied the machine would drive two or three times as fast as hand labour, but he did not think anything would be saved in a pound, shillings, and pence view.

Finally, the matter of the boring-machine having been fully discussed, and it being generally considered that the report as to its success in Dolcoath was perfectly satisfactory, Mr. RODD proposed "That the manager of South Crofty be instructed to take immediate steps for the procuring of a suitable machine that should be applied to the driving the different levels of the mine in an efficient and expeditious manner," and the resolution was unanimously carried.

Mr. RULE being of opinion that the high price of coals would shut up all the mines in the neighbourhood, proposed "That all coal should be tendered for;" but Mr. A. RICHARDS, as an amendment, proposed "That the coal should be ordered as before."——The resolution was put aside, and the amendment unanimously carried.—*West Briton.*

MERSEY STEEL AND IRON COMPANY.—The ordinary general meeting was held at Liverpool, on Monday, Mr. G. H. Horsfall in the chair. The report stated that the operations of the past year showed a profit of 20,588*l.* 4s. 9d. from which the directors paid an interim dividend of 2s. 6d. per share in February, and now recommended a further payment of 5s. per share, making together 7s. 6d. per share, free of income tax, being 7½ per cent. for the year. All extensions of premises and additions to machinery during the current year had been made at the expense of revenue, a course the directors deemed prudent, having regard to the continued depression of the iron trade. The sales during the year amounted to 426,963*l.* 12s. 2d.

THE PROGRESS OF THE BORING MACHINE IN CORNISH TIN MINES.—We hear from Camborne that the boring machine at work in Dolcoath Mine has made much greater progress throughout the past week. The first week of the first experimental month 3 ft. only of the end were cut through. Manual labour would average 1½ fms. a month; in the first four weeks of its labour the machine accomplished 2 fms.; now it is working at the rate of 5 fms. 2 ft. a month. Now as to the cost. For 1½ fm. by men would be paid 37*l.* 10s. The 2 fathoms by the boring machine cost 100*l.* But the 5 fms. 2 ft. will only cost the same sum, as far as wages go, though the 100*l.* will be added to under the item of materials. We understand that in order to work the machine three first-class men are employed at 8*l.* per month; three second-class men at 4*l.* 10s.; three others at 3*l.*: or 48*l.* 10s. for miners' wages. Compressed air costs 15*l.* a month. Explosives, coals, candles, &c., are estimated at 1*l.* a day; engineer, 8*l.* a month; smith and boy, 7*l.* do.: engine man, 6*l.*; in all 103*l.* 10s. The end was set to the miners at 28*l.* a fathom. The machine is to have the same amount, with 15 per cent. added if it accomplishes double the work manual labour would have done. Already, however, other mine managers see how boring machines may, probably, be worked more economically. Many mines can manage to work an air-compressing engine from existing boilers with only a small additional amount of fuel; or one compressor may work three boring machines. On the 46*l.* paid to underground workmen a saving can be gradually affected of 10*l.* a month. All expenses, indeed, except those for materials may be reduced. Unless there is some change of ground at Dolcoath, or other causes which operate in favour of the boring machine, the inference we draw from what we hear is this—that the men get, with their brief experience, better able to work the machine, and, consequently, show a very much larger result; and that the adaptability and economy of the compressed air driven borers can be clearly seen. A little more time and practice will solve the question.—*Cornish Telegraph.*

THE WILD DUCK, OR SPORTSMAN'S ARMS.

"Well, here we are once more fine an comfortable," says Uncle Henry Treylon, "and let me tell 'ee, sose, while I think pon 'un that our Tommy the other day had a spur dowsen in Bolenowe Cairn, and after sinken pits near the road, cut a purty lode as a man can see, and a 'ess tinney up to the shelf, with keenly gossan and prian, there's a bal there as sure as we're here." Cousin Will agreed with this, but said the time was not come yet to try the higher side bal. "I tell ee what then, comrades," says Jan Temby. "The time will come when thee must come as far south as the Wild Duck for rich copper lodes, but thee woan't believe this till the growan get in the bottom of Dolcoath, and that there run, and turn the copper lodes to tin." "Tell about tin," says Jan Jewill, "I mind when Tom Treloar and pare was worken for tin about 50 year ago in the 134 fm. level bottom the hill district, Dolcoath, an they always had had fine wages, and nobody know'd how Capt. Robin took fair samples of the tinstuff, but the bulk would never come up to the sample. Capt. Robin was fairly beaten, Tom Treloar and pare every month had fine pay-days, and lived like fighten cocks, but the adventurers wor losen lots of money every month. 'How es this,' says the manager. 'Can't you find it out,' says the purser, 'The accounts are correct,' says the head clerk. 'I'll take my oath,' says Capn Robin, 'the samples are tried right.' 'Well, what's to be done?' 'Stop the pitch,' says the manager, 'for the Gwendron men know tin too well for us,' an sure nuff the pitch was stopped, and when all went quiet the secret leaked out in this way. The 'light horse' about this time used to be out for drill and sword exercise, an Sergt D——, the say, was a grand swordsman, and could take the skin off a man's nose without bringen the blood." "That must be close shaven," says Jemmy Down. "Oh! my dear man, thee's needn't doubt it, for I've see'd'n snip the button from a jacket like winkin," says Jan Jewell. "He was a fine fellow.' "Well," says Jan," and so a was, and used to learn all the young fellows the sword exercise. Now, you all knowed Cudden Har Blee." "Oh, iss," all knowed Cudden Har. "Poor fellow, he'd a hare lip and hole in the roof of his mouth. Well, Cousin Har amongst the rest learnt the sword exercise, and used to cut all sorts of capers with a great long shoul-hilt. So one day when the wor brusen tin samples, Tom Trelour said to Capn Robin—'Would you bleve that Cudden Har could do the sword exercise?' 'No, I don't,' says Capn Robin. Pon that Cudden Har swore out 'Odd Gram it,' and goo a jump, and made the shoul-hilt fly about like a mazed thing. Everyone wor forced to fly out of the samplen house — spletten loffen. At last Cudden Har got tired, and Capn Robin and the rest come in and finished the samples. Now, this wor kept up for months to make a fool of Cudden Har and his sword exercise, but Capn Robin did'nt know that Cudden Har had brused some prills of tin, and put the powder of it on the ruflers, and when he'd make them fly out of the house every flourish of the shoul-hilt would give a whack to the ruflers, and down come the rich tin dust from the samplen iron. Cudden Har wor in clover while the sword exercise lasted, but when the pitch was stopped Cudden Har said he was no more than a common man."

"I think," says Cousin Will, "we made some remarks at my last meeting about Camborne Beacon, Jan Bennett's-lane, &c. Now, I suppose you all know where Jan Bennett's quarry is?" "Oh, iss we do, all of ess." "Well, this quarry is a great elvan range running about east, and west, and south of, and parallel with the lodes of Stray Park and Camborne Vean, and between the killas and the granite—the granite being to the south of it, and wedges out or dips very deep going west. Now, men, in my opinion, the elvan and granite to the south of Camborne Vean, Stray Park, Wheal Gons, Wheal Killas, &c., will have a powerful and beneficial influence on the lodes in those mines when worked to a much greater depth. Most of those great copper lodes produce tin on the backs. Many years ago, in one of the deepest levels in Stray Park I saw a very fine course of yellow ore in the elvan dipping, no doubt, from Jan Bennett's quarry. In some vughs in this rich course of copper ore I saw splendid crystallised grains of tin. From this fact I came to the conclusion, and I see no reason to alter my opinion, that if Camborne Vean, Stray Park, and the eastern run just named are ever sunk 100 fms. into the granite there is every prospect and probability of their becoming the richest run of tin mines in Cornwall." "Now," says Jemmy Dowa, "that's what I caal clean off. An tes so good as a sermon; and so sure as they great lodes made tin from the top so sure will them make tin in the bottom." "Tes not only so, Jemmy," says Jan Temby, "but I believe the time will come when machines will be made for forken the water and haling the trade 500 fms. deep, and that the world never see'd, nor thoft of the richess that will be found in a 500 fm. level." "We all believe this, Jan," says Uncle Henry Treglon, "and a hundred generations to come will never see the mines of this district worked out. But, look here, sose, poor old Tom is come. Is there a croom of beef left for'm?" "Plenty," says Jan Jewell. "I suppose thee'rt jest starven old Tom; but never mind, old fellow, throw to un like a Briton." Old Tom was very quiet for some time, but a plenty to eat and drink made 'un feel like a new man, and after a bit a said, "I suppose none of ee can mine when the great boiler blowed up in Dolcoath. Some could and some could'nt." "Well," says Tom, "it happened in the night. The men used to change from the boiler top and keep their chests there—Jan Matthews and Bob Jeffry nor the night sumpmen—and all in a minnit there wor a roar and shaking of the house that made the hair stand right un end from their heads. Jan rushed out. 'Twas a dark night, and in a minute called out—'Oh, Bob, run for thy life, the end of the world is come, for tes raining hot waster and hosses flying.' You see," says old Tom, "the steam was all about Jan, and he mistook the men's chests for hosses. They wor sent flying in all directions." "Thy story, Tom, es good valley for a bit of denner," says Jan Jewill, "so com'est up again next mittin."

Cousin Jack's Unpublished MS.

"THE FATHER OF ENGLISH GEOLOGY."—The free lecture at South Kensington on Saturday evening was given by Mr. W. Stephen Mitchell, M.A., on "The Rise of Stratigraphical Geology in England, and some of its practical results." The President of the Geological Society, Professor Duncan, F.R.S., took the chair, and, in introducing the lecturer, mentioned that a large portion of the imformation that would be given was the result of a careful examination of the valley in which the discoveries of the "Father of English Geology" were made. Mr. Mitchell, in commencing his lecture, said he wished it to be understood that when any of his statements differed from the accounts already in print of the way in which the "Father of English Geology," WILLIAM SMITH, was led, step by step, in his discoveries, they differed intentionally. He made a reference to the commercial condition of England at the conclusion of last century, for the purpose of showing how the various industries and means of inland communication were entering on a new phrase. This was referred to again, after describing Smith's discoveries, it being pointed out that but for their practical bearings being made known, just at the time canals, roads, and the drainage and irrigation of estates were beginning to be recognised as important, probably like other partial previous discoveries of a similar nature, they would never have gained any attention. A few episodes of Smith's early life were rapidly sketched, the chief details of the lecture being the way in which the earliest ideas of sequence of strata dawned on Smith's mind. The points principally dwelt on were that, after a dame's school education, the training in agriculture by a farmer uncle, and the subsequent serving a time in a surveyor's office, he took to the life of a surveyor, noticing during his numerous surveys such different soils as the plough revealed. Notes were taken of these facts, and, though apparently without object at the time, came in usefully afterwards. One of the earliest notes leading to any result seems to have been that wherever the "lias" and "red earth" were together the "lias" was always uppermost. The survey of coal pits at High Littleton in 1791 revealed to him the fact of a sequence of coal, shale, and sandstone. This coal pit survey,

coupled with his recollection and notes of what he had seen of the constant relative positions of the "lias" and "red earth" was the first germ of his discoveries, and suggested to him the idea of a regularity in the order of strata all through the country. The survey for the coal canal which now runs along the Cam Valley, south of Bath, made clear to him the sequence of the strata from the coal of High Littleton to the oolite of Bath inclusive. The tour from Somersetshire to Newcastle and back, taken with some of the canal committee, gave him an opportunity of seeing that the ideas of sequence of strata he had found locally true, held good also all over the country so far as he saw it. This idea of the sequence of strata being the same all through the country must, it was urged, be kept quite distinct from his subsequent discovery of the identification of strata by organic remains, and was based on physical features. Generally the two discoveries are confused together, but there was really an interval of some 18 months between. The year 1792 is, with hardly a doubt, the right year to assign to the discovery of "sequence of strata never inverted." Both his discoveries were made known generally in 1799, and in connexion with this date it must be noticed Cuvier's work of a similar nature did not appear till 1808, and then hurriedly to "take date," as he puts it. Smith's first discovery was not as Sedgwick stated connected with identification by fossils, nor was it as Whewell put it the result of generalisation on the grouping of strata, it was a simple observation of the physical features depending on the strata. The other discoveries followed naturally enough from careful observation. Photographs (shown on a screen) of the Cam Valley, south of Bath, and rock specimens lent by the Royal School of Mines, served to show how anyone going along the Valley now can easily trace Smith's first ideas. At the conclusion of the lecture Mr. Mitchell expressed a hope that the specimens of Smith's fossils purchased by the nation, but now stowed away in drawers in the British Museum, may be put in public view as a memorial of the "Father of English Geology." The suggestion was met with applause, and the Chairman, in proposing thanks for the lecture, expressed a hope that it would be carried out. Smith's manuscript table and earliest maps were exhibited in the lecture theatre.

FOREIGN MINING AND METALLURGY.

Some of the canals have been re-opened in France, and others will be closed for only a short time longer. These circumstances have not changed, however, the general aspect of the French coal trade, which remains in an extremely quiet state. At Paris there is at present scarcely anything doing in coal; the dead season is at its height, and winter supplies are not yet being laid in. French metallurgical industry remains in such a depressed state that extreme drought has not even had the effect of reviving the demand for coal for steam-engines. The compulsory idleness of some hydraulic motors through want of water is accepted as rather an advantage than otherwise for the time being. In the Nord and the Pas-de-Calais coalowners are maintaining an attitude of expectation; small current orders are being executed at the best prices which can be obtained. It is in the St. Etienne basin that the French coal trade continues to present the most activity; the St. Etienne district appears, indeed, to be comparatively free from the effects of English or Belgian competition. Upon the whole, however, it must be said that the French coal trade is passing through the dead season of a dead year.

A rather important adjudication of coal for the Belgian State lines is announced for this month. Altogether the amount required to be contracted for is 176,600 tons. The Belgian Government cannot fail to profit on this occasion from the exceptionally low prices which current circumstances have involved. The winter will probably bring with it a sensible advance, and to lay in supplies now must be regarded as a wise and prudent course. Arrangements are being matured for increasing the facilities afforded for the export of coal from Antwerp. Delegates from all the collieries of Liége, Mons, and Charleroi have visited Antwerp with the view of having an interview with the Municipal Council upon the subject. The Marcinelle Metallurgical Works Company are paying a dividend of 16s. per share for 1875-6.

The week has been destitute of interest as regards the Belgian coal trade, in which there is very little doing. Quotations have not changed, they remain extremely low for rails, merchants' iron, girders, and plates. A Royal Belgian decree authorises M. Remaele to add various appliances to his ironworks at Dankeid, in the commune of Embourg. Tenders are invited at Carlsruhe for the supply for State railway purposes of 220 cast-steel tyres and 1000 tyres of fine-grained iron. Tenders are further invited at Ludwigshafen for the supply for the railways of the Palatinate of 3500 tons of iron or steel rails, 36,000 fish-plates, 40,000 bolts, &c. Tenders are further invited at Bromberg for the supply of 60,000 Bessemer steel fish-plates, 120,000 bolts, &c. The annual summer excursion of the Association of Engineers educated at the Liége School of Engineering has taken place this year from Brussels. Visits were made to the Brussels gasworks at Laeken, the caoutchouc manufactory of M. Pavoux, at Molenbeek Saint Jean, &c.

The directors of the Acoz Forges Company (France) have issued a report to their shareholders, in which they come to the conclusion that the steel trade is as much depressed as the iron trade. This conclusion has, however, provoked a good deal of criticism and discussion. The objectors urge that, although steel is greatly depressed as regards its price—a necessary consequence of the general depression of the metallurgical interest—its production has not been shaken or reduced; on the contrary, the production of steel has even continued to increase in the midst of the trying events of the last three years. As regards the current condition of the French iron trade, there is little fresh to report, either as regards prices or anything else; upon the whole, it may be said that industrials are making little and selling little.

Copper has regained some of the ground which it had lost upon the Paris market. Chilian, in bars, has made 78*l.*; ditto, ordinary descriptions, 76*l.*; ditto, in ingots, 79*l.* 8s.; English tough cake, 79*l.*; and pure Corocoro minerals, 76*l.* per ton. The aspect of the German copper markets has not materially varied; transactions have been rather rare, but prices have been a little firmer. Upon the Paris tin market, Banca has made 78*l.*; Straits, 78*l.*; and English, 79*l.* per ton. At Rotterdam tin has generally been well supported. Banca has been dealt in at 43¼ fls., but at the last dates intending purchasers would not give more than 43½ fls. Disposeable Billiton has remained scarce, and cannot be obtained below 43 fls.; for delivery during October several transactions have, however, taken place at 42½ fls. The German tin markets have not exhibited many changes. Lead has regained at Paris a good part of the advance lost some weeks since; French, Spanish, and English lead has brought 21*l.* 4s. per ton, while Belgian and German lead has made 21*l.* 8s. per ton. The German lead markets have been very quiet. Silesian zinc, delivered at Paris, has made 23*l.* 8s. per ton. At Marseilles, Vieille Montagne zinc in sheets has been quoted at 32*l.* per ton.

FOREIGN MINES.

ST. JOHN DEL REY MINING COMPANY (Limited).—Advices received Aug. 3, 1876, ex Minho (s.), dated Morro Velho, July 1:—

GENERAL OPERATIONS—GOLD EXTRACTED TO DATE.—Produce for second division of June, being a period of 11 days, amounts to 12,852·3 oits. It has been derived as follows:—

	Oits.		Tons.	Oits. per ton.
Mineral treated	5,065·0	from	1142 =	4·382
Mineral roughly freed from killas	6,879·0	,,	664 =	10·360
Re-treatment	968·3	,,	— =	·536
Total	12,852·3	,,	1806 =	7·115
Equal to	1481·6609 ozs. troy = ·8204 oz. per ton.			

The ore reduced averages 163 tons per diem, and the produce extracted from it only amounts to 11·6 oits. per day.

The above very low produce is attributable to the considerable proportion of killas and poor mixed mineral received from the mine during the period embraced in this division. The killas has been chiefly of a light character, containing very little auriferous pyrites.

About five or six weeks more stoping may clear away the greater part of this poor mineral. After this has been done we should resume taking out average yield of gold; but casually while this poor mineral is being extracted it would be difficult and expensive to attempt to prevent fluctuations in the afeld of ore treated.

Advices received Aug. 16, 1876, ex Tagus (s.), dated Morro Velho, July 19:—

GENERAL OPERATIONS.—Throughout the first fortnight of July we have had a moderately good supply of water, our only motive-power, and the work of pumping the mine, hauling, and delivery of mineral, as also the general reduction thereof, have been carried on with regularity, and quite average duty for the season of the year has been accomplished in the general work of the establishment.

PRODUCE FOR THE MONTH OF JUNE—The gold extracted from mineral treated during June amounts in all to 37,040·4 oits It has been derived as follows, viz.:—

	Oits.		Tons.	Oits. per ton.
From general mineral	15,946·3	from	3045 =	5·236
,, mineral freed from killas	18,466·0	,,	1711 =	10·790
	34,412·3	,,	4756 =	7·235
Re-treatment	2,628·1	,,	— =	·552
Total	37,040·4	,,	4756 =	7·787

Or 4270·1556 ozs. from 4756 tons = ·8978 oz. per ton.

The above produce is the result of 30 days' extraction from 4756 tons of mineral, being 798 tons less than was reduced in May, which had 31 days. A much larger proportion of poor mineral has been pulverised in June than in May, as already anticipated and explained in previous communications. The general standard yield in May was 7·800 oits., and June has given as above 7·787 oits. per ton. It should be observed that the mineral roughly freed from killas has given in separate treatment 10·790 oits. per ton, not including re-treatment of sand, and that the general mineral, chiefly that left against the sides of the excavation, and at the western part thereof, has only given 5·236 oits. per ton. Another month's steady boring on stages may, we hope, take down nearly the whole of this mixed and poor mineral, and after that when we can work on the general stopes equally average produce of the lode may be expected.

From the sketch of the mineral ground excavated during June, which now goes forward, it may be seen that the greater part of the mineral stoping has been effected in the western part of the excavation under the level driven westward. Being tracing of a vertical section the general outline of the level of the stopes is shown on it. The poor mineral previously left against the north wall, above that level, may be roughly estimated by the green line placed above the stopes, and the part stripped down to July 1 is approximately shown by the red line. As already stated, by the end of this month it is hoped the remainder of this poor mineral will be cleared down to the level of the stopes. At the present time the stoping westward has just reached a part of the lode met with in the driving immediately above it. It may be seen that we are making eastward by rising on the back of the sump, and preparing to drive at an angle of 35°, which will gradually lengthen the stoping ground until we reach its desired eastern limit. The sinking will, of course, be carried on at the angle now named.

COST AND PROFIT.

The produce for June being	37,040·4 oits.		
Deduct loss melting into bars ...	232·4 ,,		
	36,808·0, at 7s. 9d. per oit. =	£14,263	2 0
Cost		6,412	15 9½
Leaving profit for the month of June		£ 7,850	6 2½

This is the smallest sterling cost incurred during the past 12 months, but the lower rate of produce, arising from circumstances already explained, gives a correspondingly small profit on the month's working.

MINE DEPARTMENT.—Considering the season of the year, and the water-power available, a very creditable amount of duty has been done in the department during June. The quantity of mineral raised and hauled to the surface during that month amounts to 6254 mine wagons. During the past fortnight a full force has been employed on the timberwork, especially the stulls, cross-pieces, and hauling and kibbleways in the excavation. The latter have been improved, and we have been free from accidents and interruptions in the hauling of mineral and letting down of timber.

An increased native force has enabled us to continue the work of clearing down the walls of the excavation, and at the same time quarry sufficient mineral for the supply of the stamping mills. The work of the department is going on with considerable regularity, and quite average duty is being performed.

REDUCTION DEPARTMENT.—On the spalling floors we have had a pretty regular delivery of mineral from the mine. A large proportion of the quality was under the average of gold-bearing mineral, while some of the mineral delivered on the Herring and Addison floors maintained its usual auriferous character. The stamping mills have been regularly and fully supplied, and have been driven nearly at average rate of speed.

GOLD EXTRACTED TO DATE.—The produce extracted during the first division of July, being a period of eleven days, amounts to 12,825·3 oits. It has been derived as follows:—

	Oits.		Tons.	Oits. per ton.
From general mineral	5,985·0	from	1138 =	5·259
Mineral freed from killas	6,009·0	,,	652 =	9·216
	11,994·0		1790	6·701
Re-treatment	831·3	,,	— =	·464
Total	12,825·3	,,	1790 =	7·165

The produce derived from the general mineral treated is about the average yield obtained during the past month—viz., 5·259 oits, but the yield from the mineral roughly freed from killas is lower, probably from the smaller proportion of the purer ore we have had quarried on the eastern part of the stopes, being engaged in taking down the back of the sump with the view of flattening the angle there.

The stamping-mills are kept steadily at work with a moderate supply of water, and are doing proportionate duty.

The following telegrams have been received:—On July 28—"Produce 11 days (first division of July), 12,75? oits.; yield 7·1 (?) per ton. Profit for the month (June), 7800*l.*"

On Aug. 8—"Produce 10 days (second division of July), 14,500 oits.; yield, 7·9 oits. per ton."

On Aug. 16—"Produce for month (July), 41,000 oits.; yield, 7·7 (?) (indistinct) oits. per ton."

RICHMOND CONSOLIDATED.—Cablegram: Week's run, $70,000.

— R. Rickard, July 28: The 900-ft. station is completed and ready to start drifting; before beginning the drift we shall sink the shaft 12 ft. deeper for a deeper sump, making a total depth for sump of 19 ft. The 800 drift is extended 196 ft. from the shaft; we expect in 40 ft. more to cut the ore body. The 700 winze is down 100 ft. on an incline equal to about 80 ft. perpendicular; the bottom of the winze is in ledge matter and low grade ore. Lizette tunnel is within 38 ft. of the winze sunk on the west side of the hill; the distance to rise from this level to hole will be about 25 ft.; when this communication is made it will greatly facilitate the working on the ore body discovered on that side of the hill. There is a large quantity of ore to be extracted from these workings which is high-grade in gold. On following a small streak of ore on the north-east end of the flat chamber after a few feet sinking it has opened out to a very nice body of ore; at present it is 6 ft. wide, good carbonate and galena ore. The stope in back of the 600 is still improving, at present looking well. All other parts of the mine about the same as last week.—Smelting: The furnaces are doing very good work, the No. 2 hydrocycle is quite a success for the amount of labour, it is quite equal to the big stone furnaces. The ore being smelted this week is not quite so good as it was last week.

PITANGUI (Gold).—Mr. Hilcke, Pari, July 14: In opening out the adit we find the rock is, on the whole, very favourable for boring, and I think we shall make good speed in driving this adit after the distance already driven has been opened out to the size decided upon—10 ft. high by 10 ft. wide, which will give plenty of room for working, and will give accommodation for any machinery which may eventually be required. The waterfall for working the blast, mentioned previously by me, will come 35 feet above the adit, instead of 18 feet, which is all the more favourable for ventilation of the adit.

JAVALI.—The directors are in receipt of advices, under date July 5, from the mine:—During the month of June 1227 tons of quartz were crushed, yielding 445 ozs. of gold, valued at 117*l.*, at a cost of 76*l.*, giving a profit of 41*l.*, the average being 7 dwts. 7 grs.: 28 tons of tailings produced 45 ozs. of gold.

SANTA BARBARA (Gold).—Mr. Hilcke, Pari, July 14: During June 1059 tons of mineral were stamped, yielding 3·773 oits. per ton, or a total of 3996 oits. of gold, which, valued at 8s. 6d. per oit., amounts to 1698*l.* 6s. as the estimated value of the produce for the month. The mine working cost for the same period was, at Exchange, 25⅞d., 975*l.* 10s. 8d., thus leaving an estimated profit of 722*l.* 15s. 4d. for June. This produce shows an increase of ·452 of an ounce per ton as compared with May. The capital expenditure during the month, on No. 5 stamps and new Senzala, amounted to 96*l.* 18s. 3d.—Mine: No. 1 Level: The lode in this level and the upper part of No. 1 stope was still very contracted and poor, and for want of borers operations had been temporarily suspended at these points. The lower part of No. 1 stope was from 2½ to 4 ft. wide, producing fair quality ore. The lode in the upper part of No. 2 stope was 5 ft. and in lower part 9 ft. wide. In No. 3 stope the lode is without change. In the adit level the lode maintained its size and quality. No. 1 shaft has been sunk 8 ft. on the course of the lode during the month; the lode in the same has made a change in its underlie, and was making down at a much steeper angle, seeming to regain its former underlie; it was about 8 ft. wide, composed of hornblende and killas, with lines of pyrites and quartz of a promising appearance running through it. The stoping from the shaft had principally been carried on at the south side of the same, where the lode averaged about 10 ft. wide, of first-class stone, and a considerable quantity of ore had been derived from this part. The shaft being down a sufficient depth for a level it is intended to put in a stull north and south of it as early as possible to form the level. When this is done it is hoped that the speed in sinking the shaft will be accelerated. The quantity of ore raised during the month amounted to 1273 tons, of which 214 tons were rejected as refuse stone and 1059 tons treated at the stamps. Average quantity of stone raised per borer for the month, 27·6 tons. Absence of native borers had interfered much with the operations in the mine.—Surface: The construction of No. 5 stamps was making good progress, and this new stamps of 12 heads would probably be completed by October next. The Regos had furnished a plentiful supply of water during the month.—N.B. The gross profit for the half-year ending June 30, 1876, is estimated at 3429*l.* 15s. 10d., which is, however, subject to the deductions of items for export duty on gold, commissions and agency in Brazil, and general expenses in England. During the same period the shaft has been sunk on the course of the lode 8 fms. 5 ft., or 53 ft. The expenditure on the new works has been 482*l.* 4s. in the six months.

CHONTALES CONSOLIDATED.—Mr. Danby, July 5: During the past month we have crushed 645 tons, which produced 134 ozs. of gold, average 4 dwts. per ton. Our cost for the month has been 427*l.* 16s. We value the gold obtained at 344*l.*, showing a loss amounting to 83*l.* 16s. The above cost includes the sum of 44*l.* charged to construction account. There has been 120 tons of tailings saved, which when treated will give a profit of 76*l.* Notwithstanding the heavy rains we have had during the latter portion of this month we have not been delayed to any appreciable extent by any "runs" in the mines, neither do I expect any, as I have had most of the weak points taken out. There is no material change to report in any of the mines during the past month. I have made arrangements for the reception and forwarding the "pans" from San Juan del Sur with all possible dispatch, believing these "pans" will give an increase of at least 82000 to our monthly product. Time, therefore, is of the utmost importance.

EXCHEQUER (Gold and Silver).—L. Chalmers, July 24: Mr. O'Harra comes here to-night to commence work. The ironwork, fire-brick, and fire-clay are in Carson, and to be shipped immediately. At the mine the engine shaft contract was completed on Saturday, and the shaft now measures 407 ft. When I said the contract was finished I ought to have said for sinking. The chamber at the 400 is not yet finished; so soon as it is I commence cross-cutting to the lode at this level. We have quite an influx of water at the bottom of the sump; 16 barrels an hour at first, now reduced to nine. The north drift at the 300 is in 170 ft.; lode in face 6 ft. wide, showing some good ore. Commenced stoping on this level 80 ft. north of the cross-cut driving south. The 200 ft. stope, especially in the north end, looks well. The lode in the face of the 200 is also 6 ft. wide. There are two streaks of good ore on the footwall, and one close to the hanging wall, some of it very rich. The new hoisting drums and addition to the mill engine will be here in 10 days. The mill boiler and engine bed for mill are also on the way.

— Mr. Chalmers, the secretary, received on Aug. 16 the following telegram from Messrs. Mansell and Parrick:—"After thorough inspection, unhesitatingly pronounce Exchequer far richer than reported. Recent developments daily increasing in value; 13 assays from drift and stope average 3452 per ton. The 140 rich ruby, appearing in 200. Approaching bonanza. Water issuing freely. Estimate reserves by measurement 52,500 tons. Hauling 25 tons daily. Furnace progressing. Everything highly satisfactory. Success certain. Miners excited, wanting shares.—MANSELL—PARRICK."

— Telegram received from Messrs. Mansell and Parrick this morning (Aug. 18): "Struck native silver 200 stope, freely disseminated through 6 ft. of richest ruby. Not yet to wall.—MANSELL—PARRICK."

I. X. L. (Gold and Silver).—L. Chalmers, July 24: During the past week we have been putting the engine in repair, making water buckets, repairing water boxes, bringing water to tanks for boilers, and getting ready generally.

LUSITANIAN.—Aug. 8: Palhal: The plat at the 190, in Taylor's engine shaft, is complete, and the west end of the shaft squared for the skip road. In the 110 cross-cut, south of Basto's lode, we have a wall of a lode, and a little quartz, but nothing of value as yet. At the 50 the ground in the cross-cut, north of Perna's shaft, is a hard gneiss. The lode in the winze No. 100, below the 130, west of Taylor's, is worth 2½ tons per fathom; the winze is suspended for the present, and the men put to stope to the east of it. The winze No. 101, below the 160, is going down in a lode yielding 1 ton of ore per fathom. Rise No. 102, above the 130, east of River shaft, is suspended, owing to the accumulation of stuff; the lode in it is composed of quartz. In the 190, west of Taylor's shaft, the lode is 2½ ft. wide, composed of quartz. In the 180 the lode is 6 ft. wide, composed of quartz and stones of ore, and in the 170 west, 2 ft. wide, of quartz. In the 150, east of River shaft, the lode is 2 ft. wide, of quartz and country. The lode in the 150, east of west of Taylor's, and west of the slide, is very small, but well defined. The lode in the 90, east of River shaft, is very disturbed, but giving out a stream of water. In the 70, east of ditto, the lode is 1 ft. wide, containing spots of lead. In the 50 east the lode is 4 ft. wide, but unproductive. The lode in the 28 east is of the same size, yielding at times stones of ore.—Carvallal: The 60, west of the cross-cut south of Incline shaft, contains a lode 1 ft. wide, composed of loose quartz. In the 30, north of the great lode, west of Incline shaft, on north and south lode, the lode is 1 ft. wide, composed of quartz, mundic, spots of lead and country.

CAPE COPPER.—Capt. Tonkin, June 30: Ookiep: The 80 south-east is being driven in a very good bunch of copper ore, producing 8 tons per fathom. The 80 east is not at present yielding anything of value, although at times we get some very good stones of copper ore from the end, and the ground is of a very kindly nature. The stope in back of the 80 continues to open out well, worth 8 tons per cubic fathom. This stope is being carried out south-west from No. 16 winze, and the productive ground appears to run very flat in that direction. The winze below the 68 has now reached a depth of 8 fms. 2 ft., and down to that point the sinking has been very productive, but just now the bottom is falling off in value. However, the copper ore still goes down in the side of the winze. The 68 is rather poor, but the ground is very congenial for the production of copper, and we hope the drivings will again improve in value. The stopes throughout the mine continue to yield the estimated quantities of copper ore; and, on the whole, they are looking well. In our dressing operations we are not getting on nearly as well as I could wish, as the weather very much against us in carrying on our surface work.

SPECTAKEL.—Capt. Tonkin, Capt. Ninnis, June 26: The 36 north from incline has not undergone any change to notice since last report. The 27, east from flookan course still produces a small quantity of copper ore, and the ground continues to look promising, but we have not yet intersected anything of much value in this direction. From sides of the 27 east we are pushing out two drivings, one north and another south, in a congenial channel of ground; these ends are producing a little copper ore, and they are, to all appearances, well worthy of being extended. The stopes throughout the mine have not improved, and it is the accumulation of former months which enables us to return the quantity named.

TRIAL MINES.—Capt. Tonkin, Capt. Lanksbury, June 15: At Karolusberg there is nothing new to report, as the various points are at present looking much the same as for some time past. The Nababeep Mine is looking very promising, and the two drivings that are being carried out from side of the 17 are yielding small quantities of very good copper ore. At Kildoncan we are driving out a level from end of the old workings near the surface, but this mine does not hold out much promise of proving valuable. The 20 at Narrap is at present poor, and we have put the men to rise in back of the driving in order to effect a communication with the level above.

RETURNS FOR JUNE.—Yield from Ookiep, 950 tons of 28 per cent. From Spectakel, 56 tons of 32 per cent.—Bills of Lading Received: 360 tons of ore per Muriel, and 330 tons of ore per Lynwood.—Arrival at Port Nolloth: The Ancroid, Delta, Rose of England, to load together about 1200 tons of ore.—Arrivals at Swansea: Tacna and Brunette.—Sales by Public Ticketing: 515 tons of ore on July 18, at an average of 14s. 1d. per unit, realising approximately 10,100*l.*; 700 tons on Aug. 1, at an average of 11s. 1¾d. per unit, realising approximately 15,000*l.*; and on Aug. 8 460 tons, at an average of 14s. 1d. per unit, realising approximately 10,360*l.* —Put Forward for Sale: 345 tons of ore on Aug. 22.

— Capt. Tonkin writes, on July 15, of Ookiep: The 80 south continues very rich, and the eastern end yields some good stones of copper of ore; I think this driving will show a further improvement shortly. He also reports, under same date, that owing to inclement weather much sickness (influenza) had prevailed amongst the workpeople, and the operations, both of mining and dressing, had been much impeded. The weather had, however, again become very fine, and the people were returning to work, but he anticipates that from the above cause the July return of ore will show considerable reduction.

PANULCILLO COPPER.—F. G. Welch, July 1: For the past month I can only report 35,000 quintals metrico at 5¾ per cent. This slight falling off in production is due almost entirely to the cautious and slow manner we have to work the south stope in the Mina Vieja. We are now cutting out arch, &c., and in a short time we shall be able to push on with greater speed in this stope. On Monday next we start to draw by the main shaft Mina Vieja from the 85 metre level, opening out a new stope from the 61 metre level, thus enabling us to draw a larger production from this mine than we have been doing for many months past.

[For remainder of Foreign Mines, see to-day's Journal.]

STEAM ENGINEERING.

The development of manufacturing engineering at the present day rendering it absolutely necessary that the workmen, as much as those who have control of the works, should possess scientific as well as practical knowledge, it is essential that authors should, as far as possible, avoid unfamiliar and unnecessary technicalities, especially when from their very character such technicalities are liable to be given different meanings by different readers. The distinction of force of motion and quantity of moving force, for example, is unnecessary and confusing, and the same may be said of such terms as actual energy, potential energy, kinetic energy, mechanical potential energy, intrinsic energy, and total actual energy—all used in the same book for what is practically the same thing. Conversely the absence of such confusion may, other things being equal, be regarded as a ground for recommending a book; although there may be other absurdities and defects which more than compensate for the improvement, so that it is unwise to be too hasty in drawing the conclusion that, because certain defects have been eliminated, the result must be satisfactory. The enormous advantages of the metric system in all branches of science and industry is recognised by all the most competent authorities in all civilised countries, but it does not follow that all opposed to the metric system are incompetent and unworthy of credit upon other subjects. In his new treatise on steam engineering* Mr. Nystrom has rejected a great number of terms in mechanics which are considered useless, confusing, and without definite meaning; and he very truly says that high sounding terms, without definite meaning, render the subject of mechanics difficult to learn. For this reason he has decided to employ only such terms as are used in the shop. The language of mechanics used in schools and text-books differs so much from that used in practice that when a graduate student converses with a practical man on that subject they do not understand each other, and the latter derides the former as theoretical. He thinks that this is the principal reason why theoretical sciences are so little available in practice—how far his book will remove this cause of complaint time will prove.

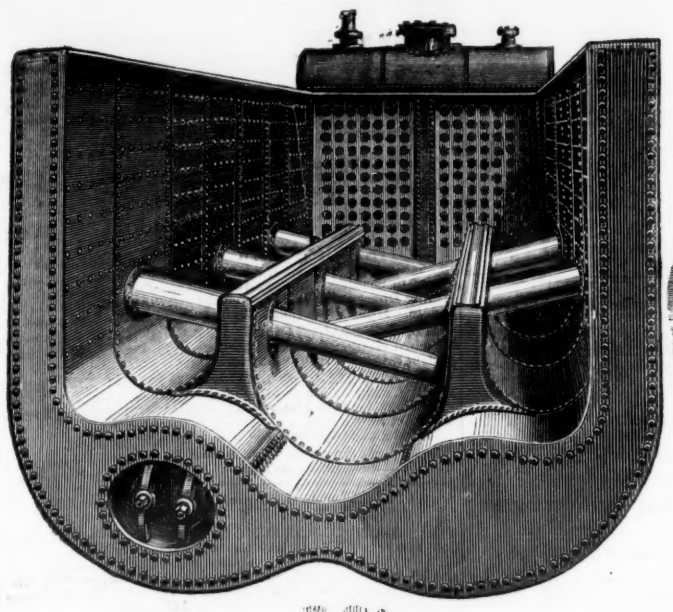
The object of the treatise, Mr. Nystrom explains, is to furnish a variety of matters pertaining to steam engineering, which appear to be wanting in that profession, and which have heretofore not been published. The authors consulted for the work are eminent experimenters, such as Regnault and Rudberg on steam and gases, Faraday, Pelouze, and Andrews on carbonic acid, Favre and Silbermann on heat of combustion, Kopp on volume of water, and Fairbairn and Tate on volume of steam; but he very properly explains that none of these *strains* are responsible for the formulas and tables which he has deduced from their experiments. He remarks that where physical sciences are not sufficiently developed to establish a law of action mathematically experiments are made for the purpose of guiding us to the law, but it is scarcely to be expected that experiments alone can give perfect results, though they give an approximation to the law of variation which must finally be adjusted and established by the aid of mathematics—this is what has been attempted in the present work. The chief peculiarity of the work is the introduction of hieroglyphic notation, special hieroglyphs being used with a view that the formula may be clear at a glance without special reference to the meaning of its characters. When these have once been learned they will doubtless form a kind of shorthand which may facilitate the writing of the formula; but the notion of giving a definite meaning to each of a large series of characters of peculiar construction and difficult to imitate does not appear to have much to recommend it, especially as one is apt to regard corresponding signs to have similar values when used elsewhere than in the formula. Another apparently insurmountable objection is that an identical character means widely different things according to the notation—steam notation, water notation, dynamical notation, steam-boiler notation, and permanent gases notation, each having its own set of signs—in which it is used; so that *S* may mean space in feet or cubic feet, specific heat, constant volume, or bursting strain per square inch of iron; and, similarly, *H* may mean units of heat per pound in steam or height of chimney in feet: and *W* may mean cubic feet of water or weight of gas in pounds. In the writing of a text book the inconvenience of this is not felt, but in applying the instruction given in practice either the signs would have to be varied or the whole formula would in many cases be a confused and unintelligible mass. Mr. Nystrom mentions that he has invited institutions of learning to discuss his views on dynamical terms, and the invitation was accepted by many, of which a few sided with him, but the majority were against his views, but Mr. Nystrom appears to attribute this to the imperfect education of his opponents.

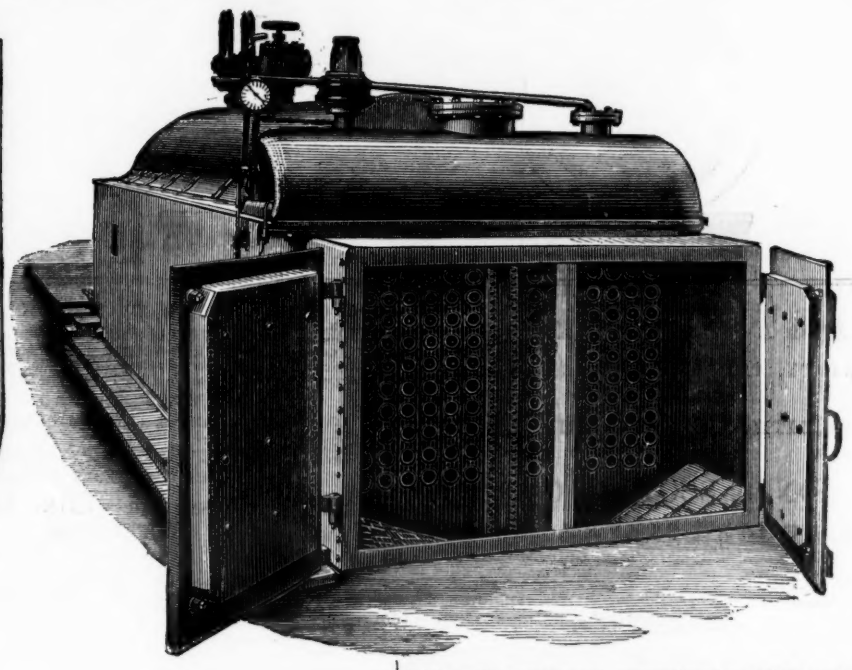
Taken as a whole, Mr. Nystrom's volume is well worthy of perusal, and it unquestionably contains information and data not to be found elsewhere, whilst the attentive reader will be able to answer questions which he would, without Mr. Nystrom's assistance find almost unanswerable. Thus the problem—Required the horse-power of a chimney 80 ft high above grate, and 4 square cross-section, would, without the book, give trouble to many even practical men, but Mr. Nystrom shows that it is equal to 49·2-horse power. The author has evidently given a large amount of attention to the preparation of the book, and although it does not strictly accord with the views entertained by those who have studied it contains many facts of consideration, and will, no doubt, be extensively read.

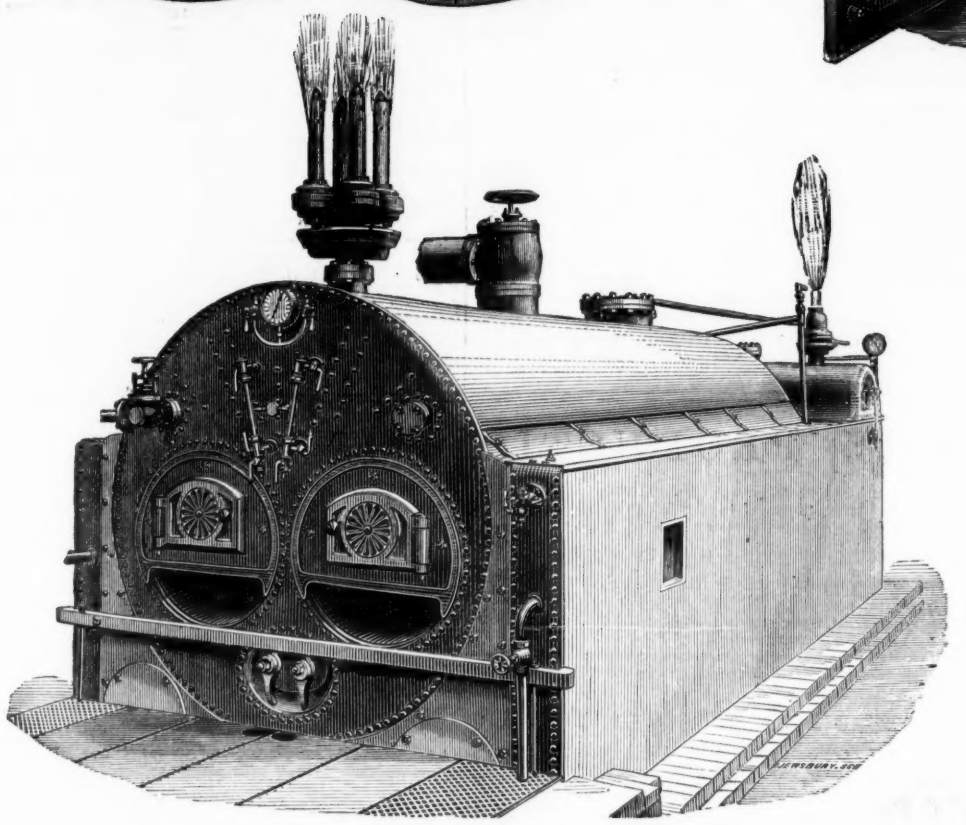
* "A New Treatise on Steam Engineering, Physical Properties of Permanent Gases, and of Different Kinds of Vapour." By JOHN W. NYSTROM, C.E. Philadelphia: Lippincott and Co. London: Southampton-street, Covent Garden.

HOLLOWAY'S PILLS—A REMEDY FOR BILIOUS AND LIVER COMPLAINTS.—Those who suffer from bile and liver complaints should try the effects of this valuable remedy, a few doses of which will make the sufferer feel elastic and vigorous, remove all impurities, give a healthy action to the liver, and strengthen the stomach. If bilious attacks be allowed to continue without using such a preventive, more serious casualties may arise, and the sufferer be consigned to a bed of sickness. Holloway's Pills are an extraordinary remedy, acting immediately in the removal of acidity of the stomach, indigestion, debility, and nausea, preparing the food thoroughly for assimilation, rendering each tributary organ perfect in its function and stimulating the kidneys.

ECONOMIC GENERATION OF STEAM.







ECONOMIC GENERATION OF STEAM.

REILLY'S BOILER CASING AND SEATING.

Much attention has recently been directed to the economising of fuel by the introduction of metal casings and seatings of steam-boilers, so as to utilise the whole of the heat produced by the process of combustion, the invention of Mr. James Reilly, of the Pomona Palace, Manchester. It need scarcely be explained that the casings and seatings of most stationary steam-boilers are at present constructed entirely of brickwork, taking long to build up, entailing great expense, and allowing when in use a great amount of heat to be lost; and to obviate these defects Mr. Reilly employs metal casings and seatings, forming metal chambers, containing water, in which the water is raised to boiling point before being supplied to the boiler. In one arrangement the casing in which the boiler is placed is formed of one or more parts, and consists of a hollow bottom, ends, and sides, the plates being kept at their proper distances apart by any required number of stays or ties, and to the hollow bottom he fixes hollow standards or supports forming the seatings of the boiler, and through these standards water circulates. The bottom of the casing rests on brick walls or other supports extending from one end to the other, and the front ends and sides are clothed with wood, felt, vegetable charcoal, or other non-heat conductor, and the bottom communicates with the ends, sides, and standards, there being in the back end a number of tubes through the metal casing, forming a large heating surface for arresting and absorbing the heat passing from the flues and under the metal bottom to the chimney.

The exact nature of the invention will be readily understood from the above diagrams, of which Fig. 1 and Fig. 2 show the front and back view respectively, and Fig. 3, the front view of the boiler and casing combined and in use. It will, of course, be understood that the forms of the chambered casings and seatings vary according to the different forms of the boilers, whether used for manufacturing or domestic purposes, but in all cases the water in the spaces takes up all the superfluous heat which has hitherto been absorbed in the brickwork enc si g and supporting the boiler, and, therefore, not only a great loss of heat is prevented but the water is heated to a high degree, and can be either pumped or injected into the boiler or used for any other purpose; and when steam is generated in the hollow casing it is either forced into the boiler or boilers or used in any other way required. In another arrangement he places at the sides and below the boiler a series of double pipes or tubes having passages for the circulation of the heat and spaces for containing water, and these pipes are connected to the ends and sides of the casing, and also communicate with the bottom and seatings, and when desired two of the pipes may be used as seatings for each boiler, and in another modification he places a number of pipes containing water in the flues, the water being heated for feeding the boiler or for other purposes. When two or more boilers are combined he causes, when desired, the heated air from the casing and flues of one boiler to pass to the flues and casing of a second boiler, and so on to a third or more, and thereby obtain the greatest possible effect from the combustion of the fuel, there being a fire in one or other of the casings when required to prevent condensation, and in all the arrangements he employs when required scrapers worked to and fro by any well-known means.

The claims to superiority which the arrangement possesses are very numerous, and comparative experiments have shown that a greater degree of economy is obtained than has been previously recorded, the amount of heat utilised approximating very closely to the theoretical heat contained in the fuel. It is also explained that a very considerable saving is effected in the space occupied by the boiler, and a much greater steam-producing power obtained from a boiler and casing constructed on this principle than from a boiler of similar size set in the ordinary manner. It is further urged that the boiler is greatly preserved, owing to the feed water being first passed through the casing and seating, where steam is produced at a pressure of 20 lbs., whereby a very large proportion of the impurities contained in the water are deposited in the casing before the water is pumped into the boiler, the deposit being readily blown off at any time. It is estimated that the actual work performed by the boiler and seating is from one-half to two-thirds more than could be done with an equal quantity of coal by the boiler alone if set in brickwork in the usual manner. The casing and seating, as well as the boiler, can be readily inspected at any time when not at work either internally or externally, and all parts are accessible for cleaning and repairs.

A public trial of the above was held at the patentee's works, Cornbrook, Manchester, on Tuesday and Wednesday, in the presence of a number of scientific and practical gentlemen interested in the subject. The experiment was watched with the closest attention by several of those present, and the results carefully noted. On Wednesday the experiment was of 7 hours 35 minutes duration, in which time 18,557 lbs. of water was evaporated. The boiler experimented on was an ordinary horizontal Lancashire boiler, 6 ft. 6 in. diam. and 18 ft. long, made by Plant and Co., of Miles Platting, and the coal used was Oldham Black Mine Burgy; the consumption of coal was 1530 lbs.; the area of grate surface was 24 square feet, the consumption of coal per hour and per square foot of grate surface was 8·4 lbs., and the temperature of the escaping waste gases 280°. The number of cubic feet of water evaporated per hour from the feed temperature was 37·51 lbs., and the number of pounds of water evaporated from 212° Fahr. by each pound of coal consumed was 13·78 lbs., so that the results were altogether very satisfactory. The boiler has been in regular use for the last three months, and has been inspected by a large number of persons interested in the economic generation of steam.

Use of Rail Ends in Blast-Furnaces.—According to Heyrowsky, it has been found at Zeltweg very advantageous to add the crop ends from the rail-mill to the charge on the blast-furnace, and at present, for this reason, the blast-furnace at Zeltweg, which formerly only produced 230 tons of grey Bessemer pig-iron per week, now turns out 270, the increase of the 40 tons in the make corresponding exactly to the quantity of rail ends added to the charge.

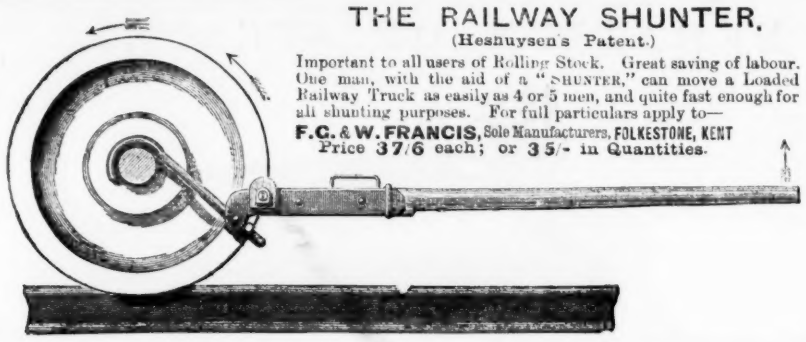
Brick Making Machinery.—The invention of Messrs. H. and J. Ward, of Leeds, relates to machinery for moulding and pressing bricks into suitable forms from clay or other dry plastic and semi-plastic material. Between suitable framework they provide a table, over which are fixed one or more cylinders; in each cylinder is fitted so as to slide freely rammers or pressers in a similar manner to those used in hydraulic cylinders; at the end of each rammer or presser is arranged a suitable form for pressing the brick. In the table is provided under each rammer or presser a mould of suitable form, into which the material required for the formation of the brick is deposited. On the table is provided a box or measure in which the clay is first passed from a hopper of ordinary construction; by this arrangement the amount of clay can be regulated according to the size of brick required. Whilst the box or measure is being filled the brick is being pressed in each mould. An intermittent reciprocating motion is imparted to the box or measure by a cam motion or other equivalent means. Within each mould in the table is provided another plunger, which is employed for forcing the brick out of the mould. The required motion is given to these plungers from cams, eccentrics, or other equivalent means. In order to prevent breakage of the machine they, by preference, fill the space above the upper rammer or presser within the cylinder with water or other equivalent fluid, and in a convenient position on each cylinder is provided a safety-valve, on which are used weights in preference to springs. When any undue pressure is put on the rammer or presser the fluid contained in the space in the cylinder opens the safety-valve and is allowed to run out; by so doing the pressure is taken off the rammer or presser, and which is allowed to move back into the space originally occupied by the fluid. Above each upper rammer or presser cylinder may be provided other sets of moulding apparatus arranged in the same manner; by this arrangement the upper and lower sets of moulding apparatus may be driven from the same gearing, and so arranged that as the lower apparatus is pressing and forming the brick, the formed brick is being removed from the mould in the upper apparatus. When preferred, instead of using fluid, a dead weight on the rammer or presser may be employed.

Improvements in Gas Engines.—Although no gas-engine has been so extensively employed as that of Lenoir, it has never been pretended that perfection had been attained, and Mr. S. Thacker, of Nottingham, has now invented certain improvements with a view of remedying some of the principal defects. In the Lenoir engine the admission of atmospheric air is regulated by a dome placed on the top of the air vessel, which dome is capable of revolving to the right or to the left, thus opening or closing the apertures by which the air is admitted. By this arrangement it is not possible to regulate properly the air on both sides of the piston. Mr. Thacker's arrangement consists, firstly, of a pair of slides working in V-grooves or other suitable guides on the top of the air vessel, which slides are adjusted by screws passing through a fixed nut, by means of which arrangement he is able to vary at will the quantity of atmospheric air admitted at either end of the cylinder. The invention consists, secondly, of an improved discharger or exploder. In Lenoir's exploder there is but one point of discharge for the electric current, which renders the explosion uncertain. Mr. Thacker makes two or more points of discharge, so that if the electric current should fail at one place it is certain to have effect at another, which is a great advantage to the steady working of the engine. He also proposes an improved method of jacketting the cylinder so as to obtain a larger and more complete circulation of water round the same, especially in the immediate vicinity of the ingress and egress ports, and an improved method of making the joint at each end of the cylinder where the cover is joined to the cylinder. Again, in the Lenoir cylinder the openings of the water spaces (or jacket) at the ends of the cylinder render the making of the joints very complicated and almost impracticable. Mr. Thacker's arrangement consists of diverting (by coring) the water circulation, filling up the spaces at the ends of the cylinder, and making the connection between the cylinder and cylinder covers at the top and bottom sides of the cylinder, or in any other part of the external surface which he may find most convenient. He also suggests an improvement in the insulation of the ebonite disc. For this purpose the discharging disc is made of one complete block or slab of ebonite, or other non-conducting material, instead of in segments as before, so as to ensure more perfect insulation.

Economic Production of White Lead.—The improved means of producing white lead by the wet way proposed by Mr. R. Palmer, of Ovington-square, Brompton, consists essentially in the treatment of acetate, or any other soluble salt of lead, with carbonate of soda in. He takes one equivalent of acetate of lead, and grinds it up with an equivalent of crystallised carbonate of soda. When this combination has attained a certain consistency, say that of cream, he allows it to stand until complete decomposition takes place, then adding water to wash out the corresponding salt of soda (which may be crystallised or utilised in the most advantageous manner), and finally drying the white lead in the usual way.

New Use for China-Clay—Artificial Fuel.—In the manufacture of artificial fuel Mr. F. J. Hamel, of Avenue-road, Regent's Park, proposes in the first place to take china-clay, and, after bringing it to a dry state, reduce it to a powder, and either introduce it into the coal dust or other substances before or after he has prepared a solution of mineral or vegetable pitch, combined with resinous and fatty and oily matters, the whole being then agglomerated together; they are further mixed by the use of a pug mill or travelling screw, and as they travel or are in motion he applies jets of superheated steam to assist in the full amalgamation of all the ingredients. He next places the prepared materials in presses for solidification; for this purpose mechanical presses of various construction may be used, but he prefers those invented and patented by himself in 1872.

The engineering, ship repairing, and boiler making business of Messrs. J. and A. Blyth, of Limehouse, will in future be carried on by Messrs. J. and A. Blyth (Limited).



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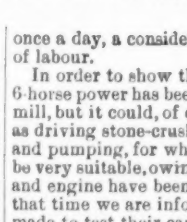

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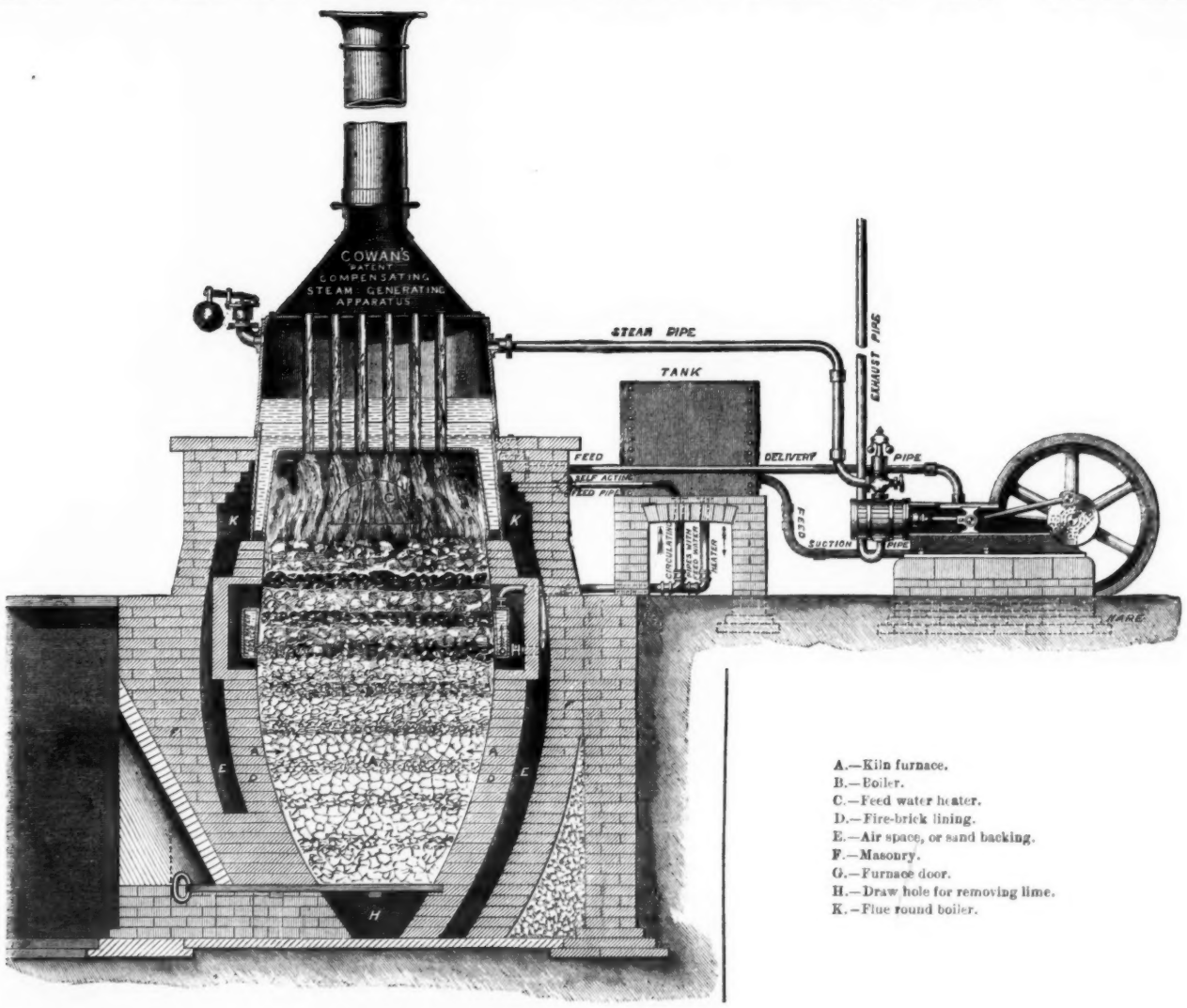
THE COMPENSATORY PRODUCTION OF STEAM.



A.—Kiln furnace.
B.—Boiler.
C.—Feed water heater.
D.—Fire-brick lining.
E.—Air space, or sand backing.
F.—Masonry.
G.—Furnace door.
H.—Draw hole for removing lime.
K.—Flue round boiler.

THE COMPENSATORY PRODUCTION OF STEAM.

We give an engraving this week of Cowan's Patent Steam Generating Apparatus, which is now in operation on the premises of the Cowan Patents Company, at Garston, near Liverpool. The principle of the invention, though simple, is very ingenious and effective. The apparatus consists in the combination of a steam-boiler of vertical or other construction with a miniature lime kiln, or, more correctly speaking, with a furnace so constructed that lime is manufactured in it, while at the same time steam is generated in the boiler by the heat arising from the combustion of the limestone and coal. The advantages which are claimed for this arrangement are that instead of the coal being used merely for the raising of steam, and being turned to useless refuse as in ordinary furnaces, it is utilised for the production of good lime, the marketable value of which is sufficient to cover, or nearly so, the cost of the fuel employed. As regards the boiler, it is asserted that a more steady and constant heat is maintained than under the old system, as much less stoking is required, it being necessary to charge the furnace only once a day, a consideration which is important in the economising of labour.

In order to show the principle of the apparatus a small engine of 6-horse power has been set up, and is at present used to drive a mortar mill, but it could, of course, be applied to a variety of purposes, such as driving stone-crushing machinery, draining mines and quarries, and pumping, for which latter purpose the company claim it would be very suitable, owing to the great economy of working. The boiler and engine have been at work for the past two months, and during that time we are informed the various experiments which have been made to test their capabilities have been highly satisfactory.

The following return of one week's working of the apparatus will give an idea as to the actual cost, and the quantity of material used:

FUEL PUT IN FURNACE.

Coal (Welsh) at 14s. 3d. per ton	3 t.	3 c.	1 q.	21 lb.
Raw limestone, at 6s. 9d. „	8	11	2	4

RESULTS.

Good lump lime made, at 16s. per ton	4	7	2	26
Slack lime, at 7s. per ton	2	9	2	26

The boiler was in steam for the whole of the 24 hours per day, but the machinery was only working for half that time.

These figures show a small balance on the wrong side, but this is accounted for by the high price of the limestone as delivered in Liverpool, and it is estimated that in places situated nearer the lime-producing districts the results would be fairly remuneratire, or at least would completely cover the cost of generating the steam. The principle, as described above, is not altogether a new one, the same company having already brought out a gas-making apparatus and a hot-water apparatus, both of which are in use on their premises, and by the latter of which about 21,000 ft. of piping in their greenhouses and vineries are at present heated. But this is the first time that the principle has been applied to the generation of steam as a motive-power, and it will be interesting to note to what extent it will compete with the old system. From what we have ourselves seen of it, we believe that if properly and judiciously worked it will undoubtedly lead to a much greater economy in the production of steam, and that it might be used very advantageously in many undertakings where this economy is an important consideration.

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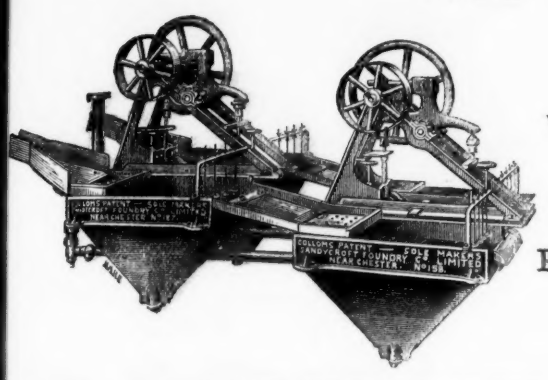

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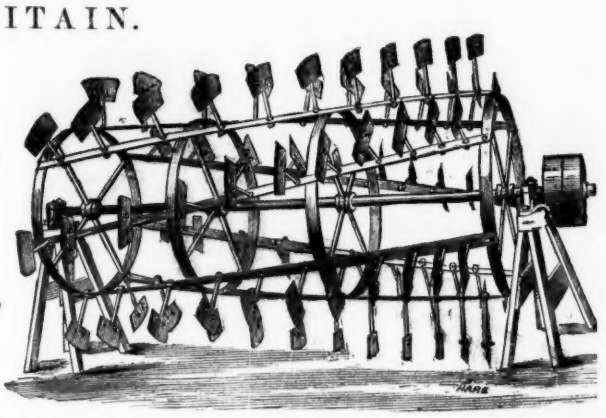

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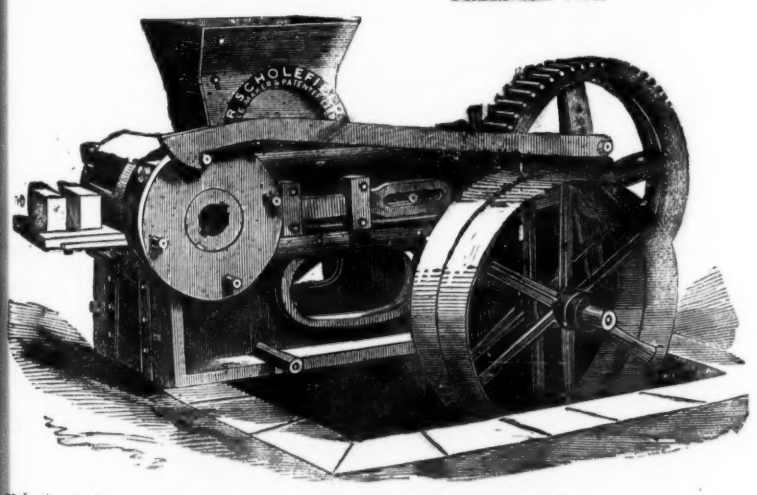
PATENTED 1873.



R. S. begs to call the attention of all Colliery Owners in particular to his PATENT SEMI-DRY BRICK MACHINE, and the economical method of making bricks by his patent machinery from the refuse that is taken from the pits during the process of coal-getting, which, instead of storing at the pit's mouth (and making acres of valuable land useless), is at once made into bricks, at a very small cost, by R. S.'s Patent Brick-making Machinery. If the material is got from the pit hill, the following is about the cost of production, and the hands required to make 10,000 pressed bricks per day:—

	£	s	d
2 men digging, each 4s. per day	0	8	0
1 man grinding, 4s. 6d. per day	0	4	6
1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0	2	0
1 boy greasing, 1s. 6d. per day	0	1	6
1 engine-man, 5s. per day	0	5	0
1 man wheeling bricks from machine to kiln, 4s. per day	0	4	0
Total cost of making 10,000 pressed bricks	£1	5	0, or 2s. 6d. per 1000.

(SETTING AND BURNING SAME PRICE AS HAND-MADE BRICKS.)

N.B.—Where the material can be used as it comes from the pit, the cost will be reduced in digging.

As the above Machinery is particularly adapted for the using up of shale, bind, &c., it will be to the advantage of all Colliery Owners to adopt the use of the said Brick-making Machinery.

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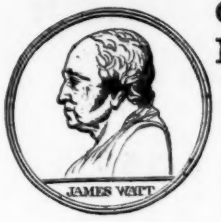

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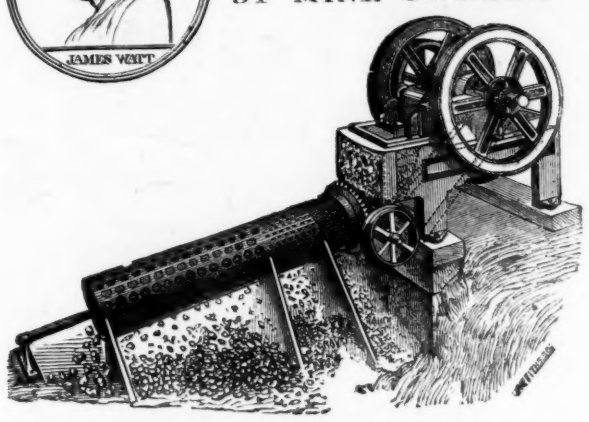

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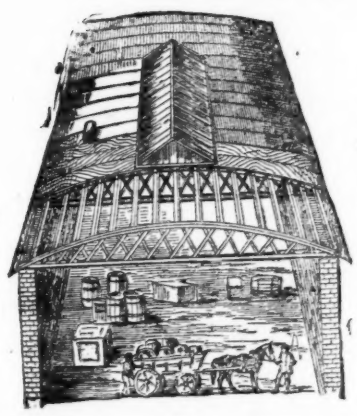

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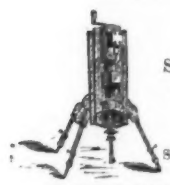

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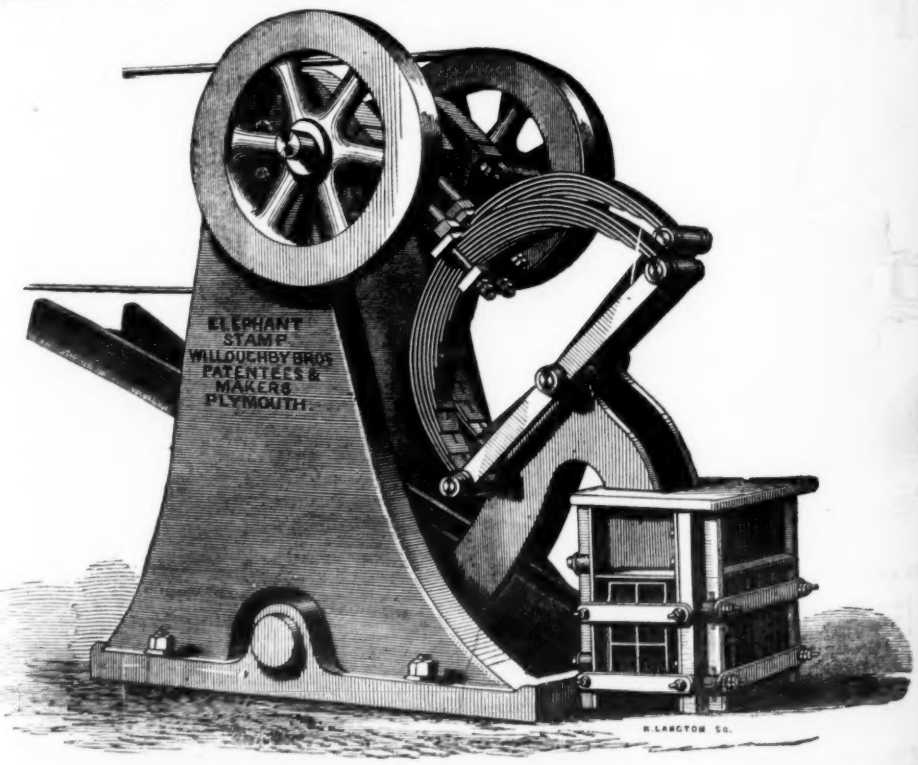

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